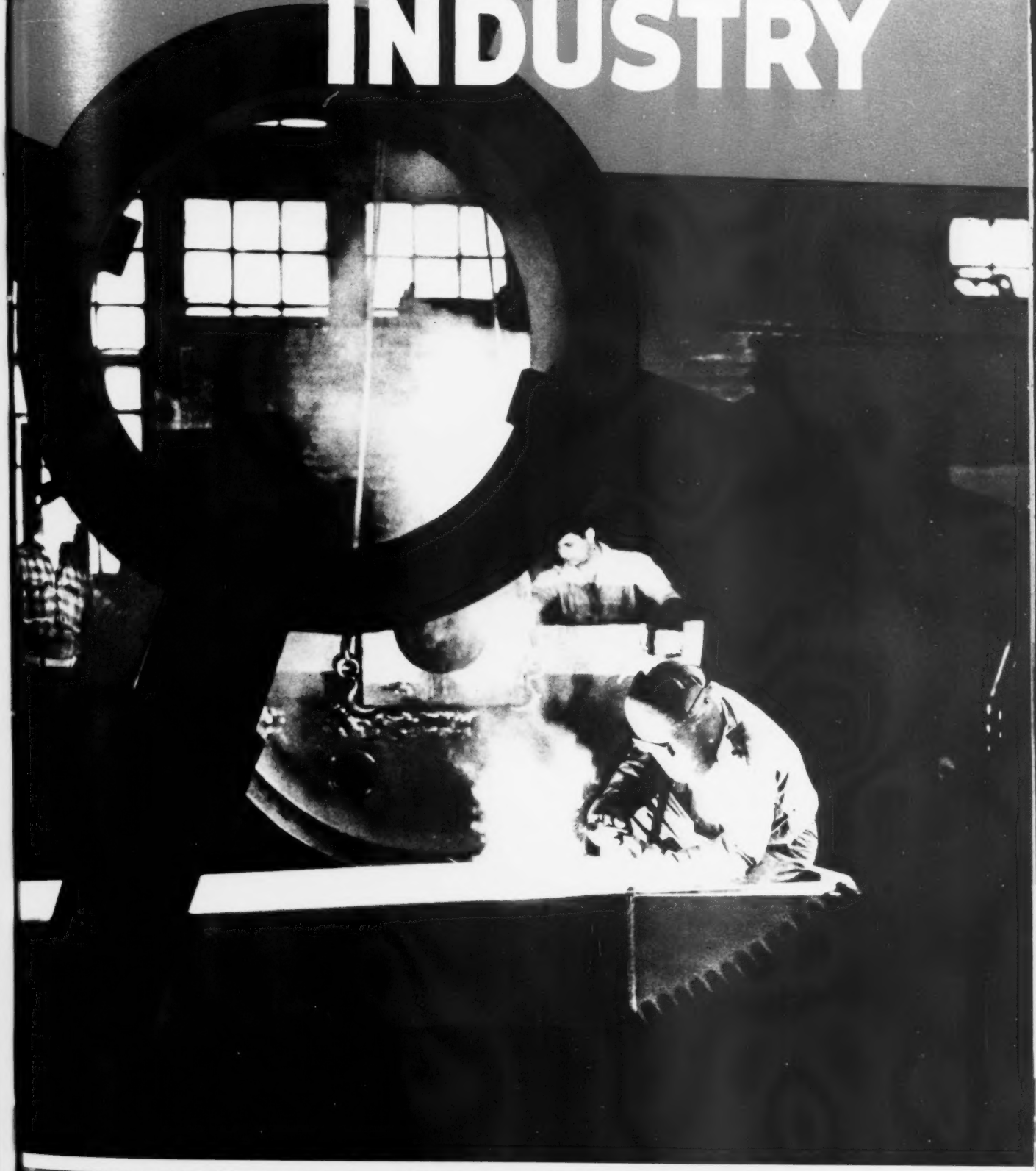
VOLUME VII
NO. 10

# WESTERN INDUSTRY



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## WHAT'S NEW with the Editor...

### Our New Format

WESTERN INDUSTRY wishes to take a bow for itself, before going further to tell what other Westerners are doing. The primary function of this magazine is to provide as much important, timely and educational reading matter about the industrial development of the West as possible. But it is also highly desirable, from the reader's standpoint, that the information be presented in an attractive and easy-to-read form.

Consequently a great deal of care and thought have been put into revising the format of *Western Industry*, and the result of this planning and study is shown in this issue of the magazine. Front cover design, treatment of illustrations, type for headlines and captions, department headings, all are examples of what has been done to make *Western Industry* visually pleasing.

These typographical changes, which have been under consideration for nearly four months, are merely one step in a general development and expansion of the editorial scope of *Western Industry*, in order to provide for the new industrial empire growing up west of the Rockies a magazine suitably reflecting and expressing the active and progressive thought of the industrial community.

Two other features in our editorial program to which we wish to call attention, are the enlargement of "The West on Its Way" section to provide a comprehensive monthly review of specific Western developments, and a series of articles discussing the natural resources of the West. One of these articles, dealing with aluminum, appears in this issue. Another, on the Utah iron and steel industry, was published in the August number. The third will appear in an early issue.

### Floodtide of Population

THE INFLUX of labor to Pacific Coast cities, of which the importation of thousands of men from the Henry J. Kaiser operations seems to be the beginning, was predicted in our Washington news letter in the August issue. Our Washington correspondent at that time pointed out that the migration would number millions, as the concentration of industrial effort into the war program became intensified.

So far only a few thousand have arrived, but they already have accentuated the housing problem, which seemed acute to begin with. How to find places to shelter them seems an almost unanswerable question for the time being, until the completion of additional housing projects, many of which are already under way. While the cessation of war, whenever that happy date arrives, will swing multitudes back to the east and middle west again, nevertheless a big proportion of these new workers are certain to become permanent residents. Okies and Arkies once had us greatly alarmed, but they are either being absorbed into the agricultural population or have returned to their native states.

To a large extent, the situation is comparable to the great tide of immigration from Europe that filled up the Atlantic seaboard and the Middle West from the time of the Civil War until World War No. 1. It is different in this respect, however, that the newcomers to the West do not have to be taught a new language, customs and ideals. They are all ready to go ahead, and the post-war industrial development in the West is likely to be surprisingly rapid for this reason in addition to others.


# WESTERN INDUSTRY

*The Journal of Western Development*


## CONTENTS FOR OCTOBER, 1942


| | |
|---|---|
| What's New with the Editor | 3 |
| Spotlight on the News | 5, 7 |
| West Holds Key to Aluminum | 8-10 |
| Lumber and Mining are "Guinea Pigs" | 11-12 |
| Winning or Losing War? | 13 |
| Westerners at Work | 14-15 |
| Sabotage—New Light on It | 16 |
| Western Industry in Pictures | 17 |
| Soldiers of Production | 18 |
| Hotter than w. k. Hinges | 19 |
| Mobilizing Manpower is the Problem Ahead | 20 |
| Labor and the Industrial West | 22 |
| Overmotoring is Needless | 23 |
| Blackout Breathing | 24 |
| Western Trade Winds | 25 |
| The West on its Way | 26-30 |
| Yours for the Asking | 31 |
| The Showcase | 32-33 |
| Convention Calendar | -34 |
| Advertisers' Index | 34 |


### OUR COVER PICTURE

Looking through a large combination stator frame and bearing bracket in a plant in the Mountain States, we see a welder using alternating current to make a weld on a bearing bracket arm for a large turbine. Photo courtesy of General Electric. Suggestions welcomed.


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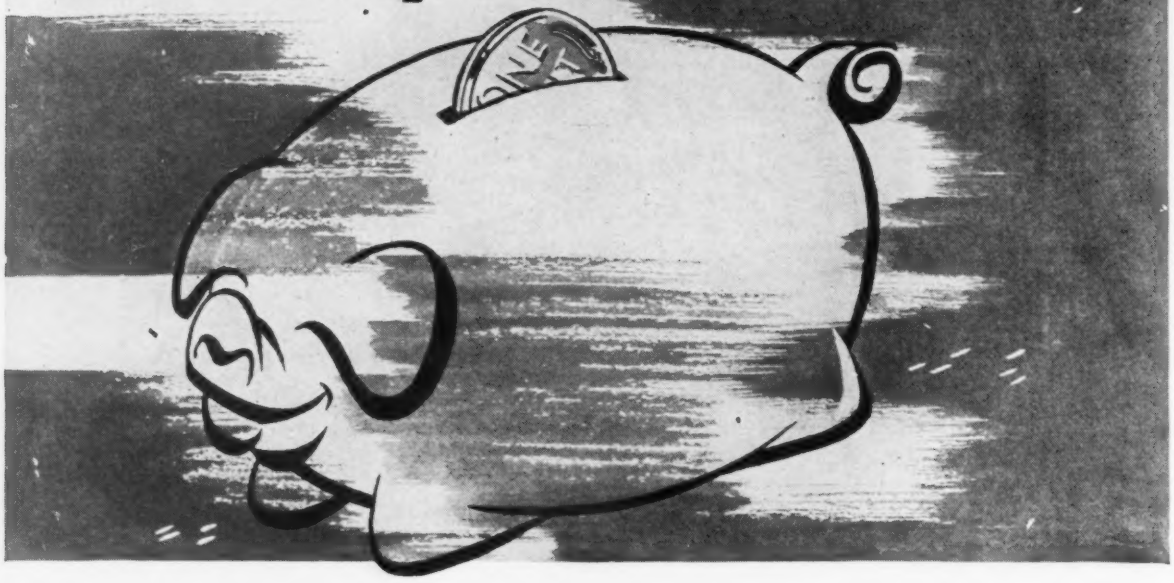
# A Penny Saved...



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# Spotlight on the NEWS

**WESTERN INDUSTRY**
**FOR OCTOBER, 1942**

VOLUME VII NUMBER 10


## Douglas Fir Becomes Mahogany Substitute For Aircraft Plywood and Big Production Starts

DOUGLAS FIR is to become the substitute for mahogany for plywood for troop and cargo gliders and training planes, and the War Production Board has called on the lumber industry in Washington, Oregon and Idaho for an immediate production of 1,000,000 square feet a month. Between 2,000,000 and 4,000,000 square feet will be needed after January 1 to meet orders already on hand.

Unlike commercial plywood produced from peeler logs on a rotary peeler in one continuous thin strip, the aircraft plywood must be sliced with the grain for strength, from cants or sections of choice logs.

These slices range from one one-hundredth to one-sixteenth of an inch in thickness. They are joined edgewise in a tapeless splicer and then bound together with phenolic glues in a hot press into laminated sheets four by eight feet.

Besides aircraft plywood the Pacific Northwest forests are called upon to provide other woods for the spars and framework of these planes. At present spruce, Noble fir and Western hemlock have all been "frozen" and allocated solely to the glider production program. Port Orford cedar in Southern Oregon has been set aside for decking and batteries. Other woods of the area are finding their way into the metal planes.

The United States Plywood Company factory in Ballard, two plants in Portland and one in Bellingham will turn out the initial supply.

In addition, the Dean Plywood Company plant in Portland has machinery for slicing and drying 60,000 square feet of fir a day and another Portland plant and a Bellingham plant have hot plate presses for turning the sheets into plywood.

Latest estimates place total lumber requirements at more than 39 billion board feet for the current year, as compared with an average annual production of less than 25 billion feet in the 1936-40 period.

Current indications are that this year's production will fall short of meeting estimated needs by from 4 to 6 billion board feet, some of which will have to be met by restrictions in less essential uses.

Pulpwood requirements — for paper, containers, plastics, rayon and similar products—are estimated at more than 15 million cords, compared with a 1936-40 average of 9.3 million cords.

## 1980 Quota Reached

So rapid has been the recent industrial development in the Salt Lake City area that less than 6,000 acre-feet of water remain unallocated out of a 32,000 acre-foot dry-year surplus from the Deer Creek project which was expected to take care of the city's needs until 1980. Included in the present needs for the new Columbia Steel Co. plant 15,000 acre feet have been promised until the company can obtain a supply elsewhere, another 6,105 acre feet are required for the army ordnance plant and other military establishments, 730 acre feet for other industries and 5,000 more to take care of the increased population.

## Eighty Rubber Mills

When the guayule rubber project gets fully under way there may be 80 mills in the West for processing the material, instead of just the present one at Salinas, California, according to Col. Evan W. Kelley, in charge of guayule operations for the Emergency Rubber Project. By the end of 1943, he says, there were to be 176,000 acres in production, and the output promises to be larger than was at first expected.

Nurseries have been started at Indio and Oceanside, each having 10,000 beds 4 x 400 feet in size. Seedlings from these

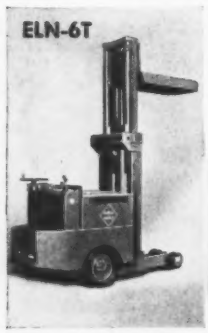
**• Western Die Casting Co., Emeryville, starts salvage drive by scrapping dies used for "Jenny" plane parts in the last war. Left to right: Mayor La Coste; President C. C. Vogelsong; Chairman Jack Childs of Salvage Committee; Chairman Sandra Martin of Victory Committee; H. R. O'Neil, in charge of drive celebration program; Ruby Maddox, who helped use these dies in last war; Weller Noble, County Committeeman**

# *Modern* ELWELL-PARKER *Trucks and Cranes*

## AVAILABLE IN STANDARD TYPES AND SIZES

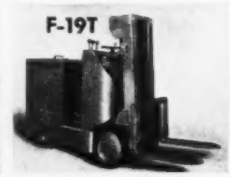
### LIFT TRUCKS

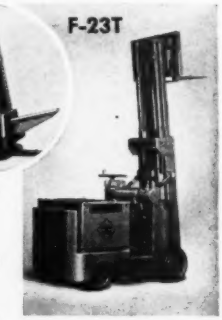
| Type | Capacity | Overall Length | Overall Width | Platform Size Length | Platform Size Width | Height at Low Position | Lifts | Turns Intersecting Aisles | Approximate Weight with Power Unit |
|---|---|---|---|---|---|---|---|---|---|
| EQ-4 | 4,000 lbs. | 87¼″ | 31¼″ | 41″ | 18½″ | 7″ | 3¼″ | 50″ | 2,900 lbs. |
| EP-4 | 4,000 lbs. | 112½″ | 38″ | 54″ | 26½″ | 10½″ | 6″ | 64″ | 4,100 lbs. |
| EP-6 | 6,000 lbs. | 119½″ | 42¾″ | 54″ | 26½″ | 10¾″ | 5¾″ | 69″ | 4,900 lbs. |
| GEP-6 (Gas) | 6,000 lbs. | 125⅜″ | 42″ | 54″ | 26½″ | 10¾″ | 5¾″ | 72″ | 4,050 lbs. |
| EP-10 | 10,000 lbs. | 129″ | 42¾″ | 60″ | 26½″ | 11″ | 5¾″ | 71″ | 5,500 lbs. |




### TIERING TRUCKS

| Type | Capacity | Overall Length | Overall Width | Platform Size Length | Platform Size Width | Height at Low Position | Height Overall | Lift | Turns Intersecting Aisles | Approximate Weight with Power Unit |
|---|---|---|---|---|---|---|---|---|---|---|
| ELN-6T | 6,000 lbs. | 129$^{7}/_{16}$″ | 42¾″ | 54″ | 27″ | 11⅛″ | 83″ | 113″ | 70½″ | 7,000 lbs. |
| ELN-6 | 6,000 lbs. | 126″ | 42¾″ | 54″ | 27″ | 11⅛″ | 83″ | 62″ | 69″ | 6,300 lbs. |
| ELN-10 | 10,000 lbs. | 137½″ | 43″ | 60″ | 27″ | 11″ | 95″ | 69½″ | 76″ | 7,500 lbs. |






### FORK TRUCKS

| Type | Capacity Up to | Long Load | Overall Length 36″ Forks | Overall Width 36″ Forks | Telescoping Truck Lifts Up to | Height, Uprights Collapsed | Turns Intersecting Aisles | Approximate Weight with Power Unit |
|---|---|---|---|---|---|---|---|---|
| F-19T | 6,000 lbs. | 60″ | 123″ | 46″ | 117″ | 83″ | 76″ | 12,200 lbs. |
| F-25T | 10,000 lbs. | 48″ | 141″ | 51½″ | 100″ | 83″ | 86″ | 15,500 lbs. |
| F-23T | 5,000 lbs. | 42″ | 118¾″ | 41″ | 117″ | 83″ | 70″ | 9,300 lbs. |

### CRANES

| Type | Capacity Lbs. | @ | Overall Length | Overall Width | Boom | Slews | Platform Size Length | Platform Size Width | Platform Size Height | Turns Intersecting Aisles | Approximate Weight with Power Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C-4 | 3,000 lbs. | 7′ | 107¾″ | 50″ | 12′-19′ | 292° | 15″ | 41″ | 17¼″ | 69″ | 10,800 lbs. |
| CX-4 | 6,000 lbs. | 7′ | 134¾″ | 63″ | 12′-19′ | 204° | 40⅝″ | 63″ | 16⅜″ | 94″ | 13,400 lbs. |
| CZ | 10,000 lbs. | 5½′ | 132⅜″ | 64½″ | 12′-19′ | 296° | 28¾″ | 50″ | 25¼″ | 88″ | 18,000 lbs. |
| EP-6C | 2,000 lbs. | 3½′ | 129⅜″ | 42¾″ | 5′-8′ | 180° | 26½″ | 54″ | 10¾″ | 70″ | 7,000 lbs. |

(Boom mounted on EP-6 Lift Truck)

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# ELWELL-PARKER *Power Industrial* TRUCKS

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# Spotlight on the NEWS

beds will be harvested in the spring. Plans call for 11,000 beds in the San Joaquin and Sacramento Valleys, and eventually plantings may extend to Arizona and Texas. The cycle is 18 months from nursery stock to the harvested plants.

Eventual rubber production from guayule will be 80,000 tons, and this year 600 tons are to be processed at the Salinas mill from 560 acres already planted. The disused mill built by the Intercontinental Rubber Co. in 1931 is being rebuilt and will be in operation by November 1.

The need for support of the guayule project is stressed in the Baruch committee report, which points out that it is pure rubber with which synthetic must be mixed.

## Chromium From Sands

Supervision of the mineral recovery plant of the Krome Corporation at Marshfield, Oregon, about to be put in operation to treat Oregon beach sands for chromium, titanium and zircon, has been placed under the direction of Edwin H. Crabtree, Jr., metallurgist at the Arizona Bureau of Mines. He has been give a four-month leave of absence from the Bureau.

The method which he and Professor A. J. Thompson of the University of Arizona worked out depends largely upon the magnetic separation of a new type of machine that combines large capacity with low power consumption.

Titanium may be used as paint pigment and in the manufacture of stainless railway and structural steels. Zirconium also is usable and in steel as a filament in vacuum tubes and as a substitute for platinum in chemical apparatus.

## Developing Aluminum

A $30,000,000 aluminum extrusion plant is being built near Phoenix, Arizona, to be operated by the Aluminum Company of America for the Defense Plant Corporation. It will include a group of buildings of permanent construction with central plant building to contain approximately 2,000,000 square feet of floor space.

Kalunite, Inc., preparing to treat alunite ore from Marysvale in the defense corporation plant at Salt Lake City, has started stripping operations at Marysvale in preparation for production of alunite ore.

When completed, this plant, the first of its kind in America and currently recommended for close attention by the Academy of Science, will treat from 300 to 500 tons of alunite ore per day to produce 100 tons of alumina and 40 tons of potassium sulphate per day.

The alumina will be shipped to the Tacoma defense plant of the Olin Corporation, parent company of Kalunite, Inc.

## Sponge Iron Plant

A commercial size pilot plant for making sponge iron is being erected at Laramie, Wyoming, by the U. S. Bureau of Mines. This locality was chosen because of its nearness to available sources of iron ore, natural gas and coal. The Bureau will also operate small-scale pilot plants owned by private companies to investigate various processes for producing sponge iron, which is obtained directly from iron ore without going through the liquid stage employed in a blast furnace. Sponge iron is used as substitute for scrap to mix with pig iron in making steel. As pointed out in the September issue of *Western Industry*, it may serve as a stop-gap in war times, but is hardly practical under ordinary conditions.

## New Employment Record

Still more California employment records were broken in August, according to H. C. Carrasco, chief of the Division of Labor Statistics and Employment. The total of manufacturing wage earners reached 724,000, a gain of 219,000 or 43 per cent above August 1941. August factory payrolls were more than $30,000,000 a week, which is 82 per cent above the level of a year ago. Increases in war industries, principally shipbuilding and aircraft, accounted for an 80 per cent rise in the number of wage earners in durable goods industries to 517,000. In August 1941 the comparative figure was 288,000. There was a 6 per cent gain in August this year over July.

## Record Peach Output

Because the government is the largest buyer of canned fruit at the present time, and takes nearly everything that can be packed, the canning industry has had no worries because the 1942 pack of cling peaches in California totalled 14,227,084 cases, the largest output since 1928. From 1928 until the present war, peach canners and growers were constantly faced with the problem of big carryovers from season to season, but now the problem has disappeared because of the tremendous demand. The largest tonnage of fruit on record—385,000 tons—was handled. In 1928 fruits-for-salad and fruit cocktail, which amounted to about 6,000,000 cases together, this year and use a large amount of peaches, were only minor items.

## Tin Smelter Proposed

A smelter for Bolivian tin will be built on the Pacific Coast within a short time, and quite possibly will be located in Contra Costa County in the San Francisco Bay area, according to Dr. Don Jose Aubertine, a University of Mexico professor. He considers California the logical location, since the state is a heavy user of tin for canning.

**• Gertrude Hill Fila (inspecting milling machine), is an aircraft tool designer who helps standardize small parts for National Aircraft Standards Committee. Holds M.E. degree from Oklahoma A & M**

• "Pot lines" or "Pot rooms," where pigs of virgin metal are poured, are the names by which aluminum production units are known

# West Holds Key To Aluminum

## *One-fourth of Nation's Production Already Comes From Northwest; Future Needs Must Be Met by Development of Clays and Alunite*

*By* IVAN BLOCH
Chief, Market Development Section,
Bonneville Power Administration

POWER contracts for the production of aluminum have been negotiated by the Bonneville Power Administration which will result in an annual production of 250,000 tons of the metal. This amount represents almost twice the total national production of primary metal in 1939.

On the basis of the present war program of 1,050,000 tons, the Pacific Northwest will produce almost one quarter of the Nation's aluminum. The bulk of this production will be financed by the Defense Plant Corporation of the U. S. Reconstruction Finance Corporation in four plants scattered throughout the Pacific Northwest, and which include as operators the Aluminum Company of America and the Olin Corporation. In addition, Reynolds Metals Company have a large plant, not government financed.

All plants utilize the standard method of the electrolytic reduction of alumina in a fused cryolite electrolyte. However, the plants operated by the Olin Corporation and of the Reynolds Metals Company employ the Soderberg self-baking electrode system, whereas the plants operated by the Aluminum Company of America use preformed and pre-baked carbon electrodes.

These aluminum plants are built in production units referred to as pot lines or pot rooms. These consist of batteries of electrolytic cells having, in the case of prebaked electrode plants, a capacity of 32,500 kilowatts, and in the case of Soderberg electrode plants, a capacity of 20,000 kilowatts. It is usual to translate power capacity to annual pounds of aluminum metal produced by the simple conversion factor of 1000 annual pounds of metal per kilowatt-year.

The pigs of "virgin" aluminum produced at the Pacific Northwest plants are shipped to various points in the Nation. A large portion is shipped to Eastern rolling mills for manufacture into sheets which are then re-shipped to West Coast aircraft industries. Some of the pigs are transported to forging and casting facilities in the Southern California area. Others are shipped East to extrusion plants.

Generally speaking, Pacific Northwest aluminum as it is used finally in Western aircraft is a much-travelled commodity. This is particularly evident if one realizes that the basic alumina required for the electrolytic reduction plants of the Northwest originates from Southeastern alumina plants which receive their bauxite ore requirements in large part from South America.

In other words, at the present time, the cost of aluminum required by Western aircraft plants includes a very substantial sum for transportation back and forth across the Nation. Aside from the obvious financial burden represented by this "joy ride," the situation adds to the national problem of transportation. This will be remedied in part by the operation of a large aluminum rolling mill now under construction in the Pacific Northwest as well as of an extrusion plant in the Southern Pacific Coast area.

The major problem, however, in sustaining West Coast aluminum production and in overcoming some of the obvious present economic and strategic disadvantages of these plants lies in the inadequacy of present sources of raw materials needed for the production of alumina. Indeed, this problem is of national concern.

To date, bauxite has been the principal source material for the production of alumina. The national program rate of 1,050,000 tons of aluminum will require roughly 4,200,000 tons of bauxite. In addition, it must be remembered that Canadian aluminum production which is on the order of over 500,000 tons of metal will require 2,000,000 tons of bauxite, and that additional bauxite is also needed for the chemical and abrasives industries of the North American continent. It can therefore be estimated that the total amount of bauxite needed to sustain United States and Canadian aluminum, chemical and abrasives industries will approach 7,000,000 tons of bauxite per year.

In 1939, imports principally from Dutch Guiana were on the order of 434,000 tons or 56% of the total United States consumption, whereas domestic production of bauxite, principally from Arkansas, was approximately 346,000 tons or 44% of the total. In terms of present estimated needs, it is apparent that bauxite production will need to be expanded almost eight times over the 1939 production rate.

Aside from very real mining problems involved, the problem of supplying the aluminum, chemical, and abrasives industries of the United States and Canada with aluminous material has been aggravated by the activities of Axis submarines in the Caribbean, which make the maintenance of our lines of supplies to South American bauxites very hazardous.

This situation raises the question of the

adequacy of our domestic bauxite reserves. Latest estimates of reserves of the only known bauxite deposits in Arkansas, Georgia, Alabama, and Mississippi indicate that only slightly under 10,000,000 tons of high grade bauxite ores of less than 7 per cent silica are available. Low grade bauxite ores are estimated at 30,000,000 tons, but as yet no suitable method has been commercially adopted in the United States to treat these ores in adequate quantities.

It is therefore evident that immediate steps must be undertaken to locate new ore, although prospects are not encouraging. It will be also necessary to proceed with all speed toward the utilization of low grade bauxite ore, as well as tailings of present alumina plants. However successful these various remedial actions are, they still do not answer the over-all problem; they are at best of a stop-gap nature which does not add to the long term security of this Nation's light metals production.

The answer lies undoubtedly in the large deposits of high alumina content clay, of which there are billions of tons in the United States, and in the utilization of western alunites. As a source of potash and alumina, alunite deposits have been investigated for many years. This material could supply a small portion of our national alumina production by treatment in acid processes as compared with the standard alkali treatment of bauxite.

At the present time, a plant is under construction in Utah for the treatment of alunite to produce alumina, which will furnish about 30,000 tons of alumina per year. Plans for increasing this operation to 75,000 tons of alumina per year are now under consideration.

In terms of the tremendous quantities of alumina required on a national basis, it is true that the potential alunite contribution is small; the known reserves of alunite ores in Washington and Utah cannot be termed of major significance but should not be disregarded. "Every little bit" is going to help.

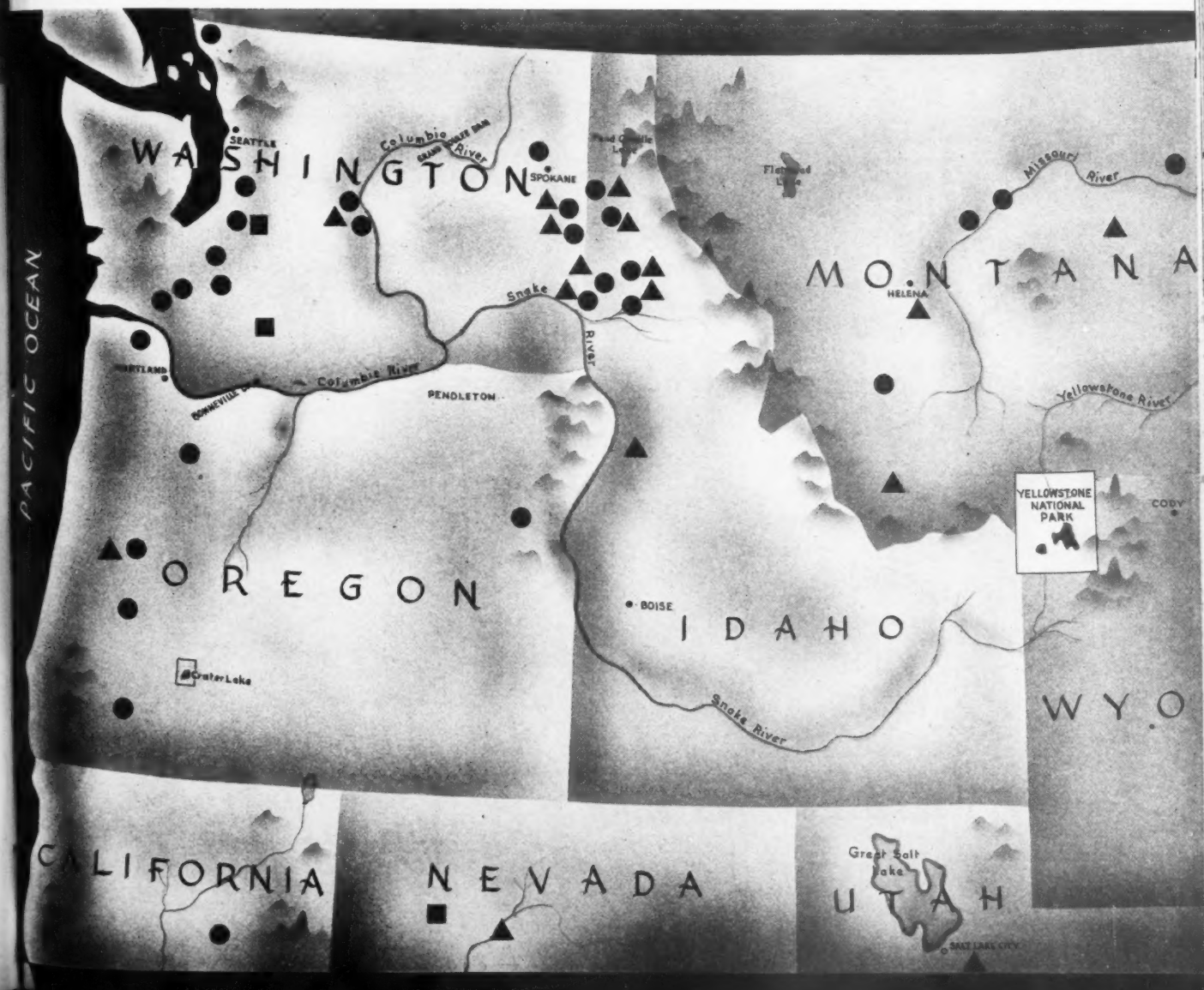
An important aspect in the treatment of alunite by the acid process is that the process can be adapted to the production of alumina from clay, or mixtures of clay and alunite.

For many years, research workers in the field of aluminum have investigated the possible utilization of high alumina content clays. Electric furnace methods were tried in Europe with apparently slight

**● Dots on this map of the Pacific Northwest indicate location of occurrences of refractory clays**

**■ Squares below denote occurrences of alunite. Data for these raw materials are approximate.**

**▲ Triangles mark regions where china clay is found. All information reported up to July 1941**



commercial results. Various other processes have been suggested, but none so far have been utilized on an economic scale.

How much of this apparent lack of success has been due to technological difficulties, or to the competitive availability of bauxite having by far the greater proportion of available alumina, or to the control by the major producers of aluminum in the world cannot be stated clearly due to the confusion which exists on underlying motives. The fact remains that in the face of a most critical situation in bauxite supplies, the United States must break across all difficulties—whether technical or of corporate control—to develop operations which will yield ample supplies of alumina from clay.

Broadly speaking, the problem of the manufacture of alumina from clay involves the separation of the aluminum oxide of the clay from its associated silica, iron oxides, and titania, at costs that are competetitive with similar operations on bauxite. Although the cost of producing alumina from bauxite by the standard Bayer process has never been clearly revealed, it can be assumed to be not more than $45 to $50 a ton at the production plant. Therefore any meritorious clay process must necessarily fit into this cost limitation, at least from a long term competitive point of view.

An immediate advantage of domestic clay deposits is that no extensive ocean hauls from distant mines will be necessary. Furthermore, there are innumerable high alumina content clays in the United States, the mining of which can be accomplished by steam shovel operations. On the other hand, the best clays' alumina content is such that from three to four tons of clay will be required per ton of alumina, as compared with the usual two to one for bauxite.

In terms of processes, it can be said that the acid-leaching method has received the most attention by the technicians of this nation and that pilot-plant operations have been carried on to the point where it is evident that such a method is the quickest way now known for the treatment of clay. The process involves the treatment of clay to produce an alum which is subsequently processed to a hydrate of alumina. Sulphuric acid in dilute solution is the principal reagent utilized in this process. Where alunite is mixed with clay, sulphuric acid can be recovered and recycled; and some potash can be obtained which could be marketed as a by-product credit to the over-all operation.

Other processes have been devised, but none has yet reached as advanced a stage as the sulphuric acid-leaching method. The Kalunite Corporation in Utah (a subsidiary of the Olin Corporation) is reported to have produced recently in a semi-commercial plant many tons of alum from clays. The alum made is suitable for further treatment by this organization's autoclaving process to produce alumina. The U. S. Bureau of Mines also has devoted much time to clay acid-leaching processes, particularly at its Salt Lake City metallurgical station.

The Pacific Northwest has many extensive clay deposits which are potential sources of alumina. Laboratory work done by the Kalunite Corporation, the U. S. Bureau of Mines and others show that many of these clays are definitely amenable to treatment by the dilute sulphuric acid-leaching process.

In this respect, it must be noted that every clay seems to necessitate a different approach in assaying. This is due to the fact that percentage of alumina content does not necessarily reveal its availability. Complex interrelationships between the silica, iron and titania are extremely important in the determination of clay suitability.

The aluminum reduction plants in the Pacific Northwest, in general, are located in favorable proximity to suitable clay deposits. Alumina plants could be located within easy trucking or rail transportation to both clay and aluminum reduction plants. It has been estimated by certain sources that clay alumina could be delivered to the Northwest aluminum reduction plants at costs well below those now paid for bauxite alumina from Southeastern Bayer plants.

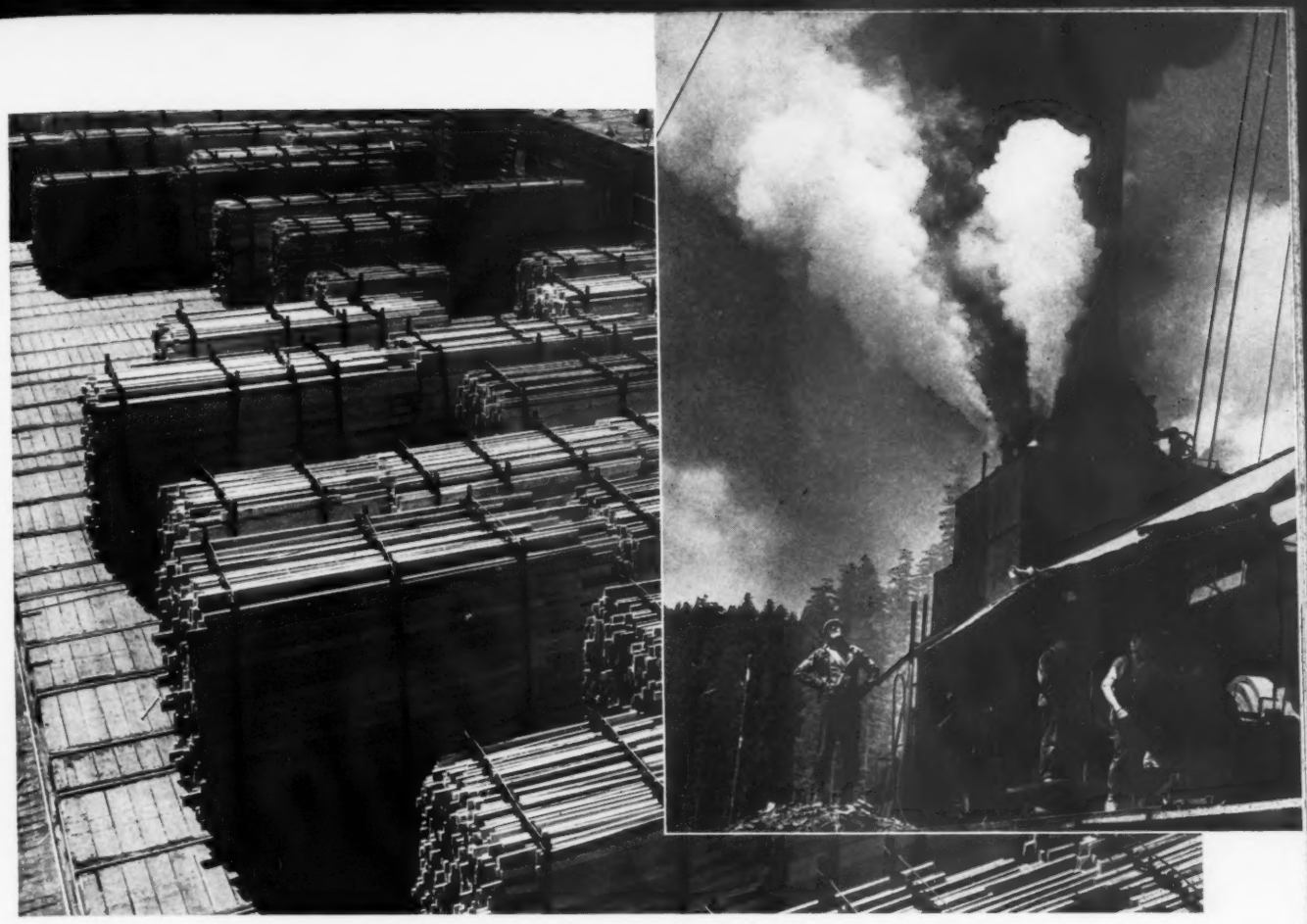
At the time of writing these notes, there are some indications that plants for the utilization of Northwest clays are under discussion among Washington officials. It should be hoped that no undue delays will be encountered in the granting of necessary authorizations for the construction of such plants.

Many questions have been raised as to the long term economic feasibility of Pacific Northwest aluminum plants. Costs are not available on the operation of these plants as yet, although reliable sources have indicated that some of the plants are producing metal at very satisfactory cost levels. Certainly one favorable factor is the extremely low price of power, which in Pacific Northwest electrolytic aluminum production approaches 2 mills per kilowatt hour.

When local sources of alumina are developed, there is little question that pig aluminum produced in Northwest plants will be highly competitive to aluminum produced elsewhere. If fabricating outlets are provided in adequate capacity, the inevitable conclusion can be reached that aluminum production in the Northwest will have an excellent chance of survival upon resumption of peace conditions.

At the same time, it would be foolhardy to discount the past history of the aluminum industry, which has been based on a policy of restricted output and high prices for the final product. It is largely up to Western interests to see to it that no undue restrictive influences are permitted to prevent the logical continuation and expansion of this important activity. The West must constantly seek new ways to utilize light metals in its daily life, in transportation equipment, in domestic uses, in new rural applications.

**• The first batch of 55-lb. pigs of aluminum from one of the new Pacific Northwest plants, ready for shipment**



# Lumber and Mining Are Guinea Pigs

***Two Leading Western Industries Chosen for First Tests of Inevitable Future National Regimenting Of Labor Needed to Make Our War Victory Certain***

FREEZING of workers in the lumber and mining industries in 12 Western states by the War Manpower Board is a test. The Board admits the order cannot be enforced directly, and many officials openly say they do not expect it to work, except by voluntary cooperation by workers and employers, and by the power of the army and navy over contractors.

An indication that cooperation has a fair chance of succeeding is seen in the voluntary agreement temporarily freezing wages of an estimated 200,000 lumber and sawmill workers on the Pacific Coast. This has been accepted by the International Woodworkers of America (CIO), the Northwest Council of Lumber and Sawmill Workers (AFL) and key lumbermen representing operating companies.

Although the loss of men from lumber mills to the shipyards in the Northwest, and from Califorina and Arizona mines to shipyards and aircraft have received the most publicity, the situation in the aircraft industry, due largely to the draft, begins to loom up alarmingly also.

Approximately 18,000 employes have left the aircraft industries of the Pacific Coast, according to authoritative governmental sources. This is the count since January 1, although the shift increased approximately 200 per cent in August and was still going up in September.

Some officials foresee that the aircraft industry will be denuded of skilled workers of draft age by January 1, 1943. Some of the workers are leaving before they are available to train those who replace them.

Officially, Washington sees no real method that may be invoked at present to stop this rush provoked by official discussions and draft board operations.

Undersecretary of War Patterson has attempted to invoke moral suasion by appealing to the patriotism of aircraft workers in suggesting they are needed more at work than in the armed services. Also he said no *voluntary* enlistments will be accepted from 2A, 2B or 3B registrants without clearance from their local boards; nor will the army offer commissions to men who would be more useful in industry.

On the other hand, other war and navy spokesmen continue to appeal to draft-age unmarried men to enlist if qualified. Apparently the tangle will not be straightened out until the Manpower Law is made more drastic, and the War Manpower Commission is given more actual power.

Lumber establishments in the Northwest have suffered more loss of men to shipbuilding in California, because in so many cases both operations are carried in the same town, or close enough so that the workers did not have a great problem in moving their families. The type of work also is sufficiently similar that the men from the lumber industry made very desirable shipyard workers. Rigging slingers,

for example, were well fitted to become crane operators.

The U. S. Employment Service is blamed by some California lumber operators for running big newspaper advertisements in such towns as Eureka, offering employment in the Northwest shipyards, including free bus fare. Official records of the California State Department of Labor, however, do not show any sizable loss of men up to July. Lumber employment for that month showed an index of 116 as compared with 100 for July 1940, while the index for July 1941 was 118, only two points higher than this year.

Average lumber industry wages in California compare favorably with the general state average for all industries, 97c an hour for lumber as against $1.01 for all occupations.

The employment index for mining in Californa is a most graphic illustration of what evidently is happening all through the Western states. From a base of 100 in 1940, employment rose to a peak in April 1941, then dropped off slightly to 103.3 in July of that year and thereafter continued to decrease to 64.4 in July 1942, a loss of 40 per cent in one year. The real toboggan slide started last March.

Earnings figures also tell the tale. Where manufacturing industries in general have been paying an average of $1.01 per hour, mining only has paid 87c. This means weekly earnings of $44.14 for manufacturing generally, and only $38.16 for mining, with hours approximately the same.

Copper mining in Arizona also has suffered severely, and the Troutdale, Washington, plant of Aluminum Company of America has had to shut down for lack of men.

While the freeze is intended by the WMC to keep employees from leaving these two industries, it also has an unlooked-for aspect in that it keeps newcomers from entering them. For example, boys coming of working age in Arizona copper mining localities undoubtedly will be hesitant about taking jobs that they cannot leave once they have signed up.

Expectations that women will replace men to a large extent in industry are already being borne out to some extent by employment statistics. Thirty thousand more women are employed in California manufacturing industries today than a year ago, it is estimated by M. I. Gershenson, Principal Statistician for the Division of Labor Statistics and Law Enforcement.

Women wage earners in California industry, exclusive of clerical, sales, executive, technical or professional personnel, totalled 101,800 in July. Part of this total is seasonal employment, as the increase of women working in canneries was more than 19,000 for July over June. In June the employment total for all industries was 76,500, and the women then represented 12.6 per cent of all wage earners in California, while in July the percentage rose to 15.3 per cent.

In the durable goods industries, approximately 35,500 women were employed in July, a gain of 6,200 over the 29,300 employed in June. The proportion of women to total wage earners in these industries rose to 7.3 per cent in July from 6.4 per cent in June.

Most of this increase was due to a rise in the number of women employed in aircraft plants to 23,600 in July from 18,000 in June. A relatively large increase also occurred in establishments producing electrical machinery and equipment and rubber products. None of the private shipyards in California employed women in any appreciable number in July, but one government yard employed over 2,000 women.

**• Women employees in the London Mines and Milling Company mill at Alma, Colo., sort waste. Heavy hammers to crack the larger pieces are slung at their sides, and they get tired and dirty, just like the men**

**• Steam shovel operations at big Phelps-Dodge open cut copper mine at Morenci, Arizona, drop ore directly into cars for hauling to smelter**

## Farm Labor Plans For 1943 Setup

California agricultural interests are already preparing to meet the labor problem for the 1943 season. Although the importation of 1500 Mexicans for the beet sugar harvest and the use of volunteer labor has helped tide over this year, a more complete organization is being set up for 1943.

It will be called the California Agricultural War Manpower Committee, with representation from the government and state, the California State Chamber of Commerce, farm organizations, processors, U. S. Employment Service, labor and the volunteer manpower groups. Heading it will be R. N. Wilson, director of the agricultural department of the State Chamber of Commerce.

The state will be divided into six divisions, with committees in each providing weekly reports on agricultural needs in each county of the state and co-ordinating the work of publicity, recruiting of labor, placement, transportation and housing.

This is expected to provide a quicker and more intelligent means of meeting labor shortages in each district.

## Steel Records Broken

• Production of electric furnace steel at Columbia Steel Company's plant at Pittsburg, Calif., showed an increase for the fourth consecutive month in August. In that month production of this steel was stepped up 5.6 per cent. Production of straight and cut products was also up 12.6 per cent during this month, allowing for a heavy increase in welding wire for West Coast shipyards. Similarly, the production of rods showed an increase of 1.3 per cent for the month which will mean a greater increase in wire and nail products. At the company's Torrance, Calif., plant, foundry castings for government work were increased in August by 7.2 per cent.

## To Make Welding Rods

• Lee Welding Rod Manufacturing Co. of Los Angeles, first plant of its kind in Southern California, has gone into production just seven weeks after the first shipment of machinery to the factory was unloaded. The company is making extruded electric welding rods of the structural or mild steel type widely used in war industries. Lee Bergstrom is president. He was formerly vice-president of the Bergstrom Steel Company, Ltd. and at present is an officer of the Bergstrom Alloys Corp. of Reno, Nev., which manufactures another type of welding electrode. Associated with him is Arthur G. Brown, formerly manager of the Columbia Steel Company.

## Purity Record

• Reynolds Metals Company, who began producing aluminum at Longview, Washington, last year, in exactly four months and 14 days after pouring the first concrete, report a purity record also. One hundred per cent of the plant's current output, according to the company, consists of aluminum with a purity of 99.60 per cent or better, and substantial quantities with a purity of 99.85 per cent are being produced regularly. Commercial purity of aluminum is 99.3 per cent, and all of it testing 99.60 or better commands a premium in price. The Reynolds people believe their record has never been equalled anywhere in the world.

## Insurance Rule

• Automobiles used to carry fellow workers to and from work are covered by the terms of most automobile liability insurance policies, according to Francis Carroll, Northern California state director, OPA.

# Winning or Losing War

***Pres. Chas. E. Moore Of Joshua Hendy Iron Works Talks Plain To Foundrymen Sept. 11***

I WON'T ASK to have a man deferred. If a man is mighty smart with Joshua Hendy, he's smart with Uncle Sam. We have got to turn these kids out. Women can be core makers and do a lot of other foundry jobs. In England I saw hardly one man to 50 women in the plants, and the women were lifting 50-pound weights. We have got to come to that here also.

We are losing the war today. We are being out-fought and out-produced by the Axis. The score is 21 to 0 against us, and only two quarters left to play. We'll win in the end, but not until we dig in harder. We've got to have the Beaverbrook spirit. When he jumped in after Dunkirk and equipped a fleet of fighting planes that could only stay in the air 20 minutes, he was considered the most ruthless man in England because of the measures he took to effect the result. But when the Germans came over London in the fall of 1940, they suffered a loss of 7 or 8 to 1 and were beaten. Beaverbrook typifies the quality we all must emulate.

What happens to us here at home is immaterial, as long as our sons and our nephews are out fighting the Japanese and the Nazis. If helping them isn't worth the price, let's close our shops and go home. Our armed forces are doing their best with what we give them; they succeed or fail on what we do, on how many ships, planes and guns we give them, and how good this equipment is. If we don't give them better stuff than the enemy has, we are going to lose. This is a mechanized war, which England and France paid a bitter price for not recognizing earlier. Our own government is not too mechanically minded.

The shop that is doing a good job today is the one that has a good manager. What makes a good manager? The man who is thinking of his health, or how much money he is going to make? We could haggle over prices at Hendy's and I know that we pay two or three times what we would pay if we waited a week, but to get material to the machines quicker is what counts. What difference does it make today anyway what price we sell for? The government will take it all away from us anyway.

Management is a different business from being an engineer. No chief engineer is a good manager just because he is a good chief engineer. And if you are just sitting on top of the business because you happen to own it, you ought to be ashamed of yourself. You ought to hire someone else to run things if that is the case, because it may be your son or your brother somewhere in the armed forces who is waiting for the stuff to come from your plant.

It is easy to say, "I can't get the people to turn out the stuff," as an excuse for not producing to the utmost capacity. If we are in that position, we had better ask ourselves, "Why are we here?" In England I saw one factory running full shifts 24 hours a day, and not ten minutes walking distance away another plant where they only had 80 men on the swing shift and none on the night shift, because, as they said, they could not get the workers. Obviously, that wasn't the answer.

Nor can labor spend all its time thinking about preserving its social gains and government officials about being re-elected.

# WESTERNERS AT WORK...

### At the Helm

In charge of the Oregon Shipbuilding Company yard at Portland, where the almost unbelievable speed of ten days from keel-laying to launching was made in the case of the Liberty ship Joseph N. Teal is Edgar Kaiser, son of Henry J. Kaiser. As this ship hit the water it was 87 per cent complete. President Roosevelt witnessed the launching. The yard also received its third gold star to be added to its pennant.

**EDGAR KAISER**
**Spark-plugs 10-day launching**

### Menasco Officers

Robert Miller has been elected vice president and secretary of the Menasco Manufacturing Co., and Edwin V. Carlson, treasurer. Mr. Miller joined the company last year as assistant to the president, serving as secretary since April, 1941. Mr. Carlson joined Menasco as chief accountant in 1941, previously having been associated with Lockheed Aircraft Corp.

### Chambers of Commerce Changes

Hance H. Cleland, president of the San Diego Gas and Electric Co., has been appointed vice president of the San Diego Chamber of Commerce. He succeeds William LaMonte, who resigned to report for active duty as a lieutenant with the Navy.

Harvey G. Hancock, assistant to the president of United Air Lines, has been elected to the San Francisco Chamber of Commerce Board of Directors, completing the unexpired term of Murray Draper, who now is a lieutenant in the Navy.

Karl Krogstad has been appointed assistant director of the public relations department of the Seattle Chamber of Commerce, succeeding Wendell Broyles who resigned to become head of the news bureau of the Associated Students, University of Washington.

### Supervision to Research

Charles G. Maier, formerly supervising engineer for the Pacific experiment station of the U. S. Bureau of Mines at Berkeley, has resigned to take charge of fundamental research for the Battelle Memorial Institute at Columbus, Ohio.

### Iron Man

After three years as vice president and general manager of General Iron Works Company, Denver, Colorado, Charles O. Voigt has stepped in to the presidential position.

Mr. Voigt came to Denver 25 years ago, when he became associated with the Stearns Roger Mfg. Co., and at present is first vice president of that company in addition to his position with General Iron. In 1921, he became connected with the General Iron Works, when it first was organized; in 1929 he was elected vice president; and in 1939, vice president and general manager.

**CHARLES O. VOIGT**
**Chosen iron firm president**

Currently, he is a director of the Denver Chamber of Commerce, a management member of the Regional Labor Supply Committee, and serves on the Advisory Board of the Training-within-Industry Committee.

### Awarded WPB Medal

R. M. Dorman, superintendent of recruitment and training for the Marin Shipbuilding division of W. A. Bechtel Co., has been awarded the WPB medal of achievement in recognition of his work. Mr. Dorman has provided 15,000 workers for the new yard. Formerly, he was deputy director of the California department of employment, and in 1934 was technical consultant of President Roosevelt's committee on economic security.

### Cement Official

Frank E. McCaslin has been elected to the office of president of the Oregon Portland Cement Co., Portland, Ore., succeeding the late Lawrence C. Newlands. He has been associated with the company for

**FRANK E. McCASLIN**
**Oregon cement operator**

twenty years, serving as vice president and secretary-treasurer for the past several years. Active in civic work, he is first vice president of the Portland Chamber of Commerce, a member of the Board of Directors of the Community Chest, Rose Festival Assn. and Traffic Safety Commission.

Other officers of the organization are: H. L. Knappenberger, vice president and sales manager; David H. Leche, vice president and general superintendent; Harold P. Davidson, treasurer; and Lee Parsons, secretary.

### Technical Adviser

David G. Kennedy, for seven years production and sales manager for E. I. du Pont de Nemours & Co., Inc., on the Pacific Coast, has been transferred to Washington as a technical adviser in the company's war service department.

### Telephone Man

Ray Dalton is the new vice president and general manager of the West Coast Telephone Co., Everett, Wash. He will have charge of all operations of the company in Washington, Oregon and California. G. E. Kreiger will be his assistant in charge of commercial and traffic operations.

### Heads Priority Office

C. Henry Bacon, Jr., heads the new branch office of the Priorities and Production Division of the War Production Board which was opened recently in Tacoma, Wash.

### Power Executive

Samuel P. MacFadden has been elected to the position of executive vice president of the Puget Sound Power & Light Co., Seattle. Mr. MacFadden came to the Pacific Northwest as a vice president and director

**SAMUEL P. McFADDEN**
**Seattle power executive**

of the company in 1930, having been associated with the Eastern Texas Electric Co. and the Beaumont Electric Light & Power Co. in Texas. At present, he is a member of the American Institute of Electrical Engineers.

Other vice presidents named were: Patrick Johnson, Lawrence E. Karrer, Charles F. Terrell and Cecil Webb.

### Manages Oxide Plant

D. M. Kerr has been placed in charge of the new magnesium oxide plant of Permanente Metals which is operating on sea water. Formerly, he was superintendent for Westvaco Chlorine Products Corp. in California.

### Transportation Superintendents

Rex E. Hallawell has been named general superintendent of transportation for Southern Pacific, and Grover C. Baker steps into the newly created position of superintendent of transportation. Hallawell succeeds the late W. B. Kirkland.

### Fuel Coordinator

Dr. J. B. Umpleby of Seattle, Wash., has been named Assistant Solid Fuels Coordinator for War, to meet the threatened fuel emergency in Washington and Oregon. David Eccles of Salem, Ore., and P. Hetherton of Olympia, Wash., will act as Deputy Directors for Oregon and Washington respectively.

### Supervises Magnesium Plant

E. H. Mangan has been appointed general superintendent of the magnesium reduction plant which the Electro Metallurgical Co. is building for the Defense Plant Corp. near Spokane, Wash.

### Bonneville Appointment

Warren H. Marple has been named manager of the Lower Columbia district office of the Bonneville Power Administration, with headquarters at Portland. Marple has been assistant to W. A. Dittmer, chief of the Bonneville system planning and marketing division since October, 1939, and previous to that was power examiner on the Federal Trade Commission at Washington.

### Heads Paper Mill

Almost 40 years to the day after he started working for the Everett Pulp & Paper Company, Everett, Wash., as an office boy, W. J. Pilz has been elected president and general manager. He succeeds the late A. H. B. Jordan.

**W. J. PILZ**
**Heads up pulp firm**

Other officers elected at the same time are: Anson B. Moody, vice president and assistant general manager, and G. A. Blomberg as secretary and assistant treasurer.

### Post-War Aide

Roy Seeley, Los Angeles, has been appointed a member of a new committee in the Society of Industrial Realtors created to make a study of today's industrial developments as they relate to post-war urban readjustment.

### Production Specialist

Robert H. Sayre, Sr., has resigned as vice president in charge of production for the Rustless Mining Corp. to accept a position with the government as head production specialist, minerals division for the Board of Economic Warfare.

### Industrial Relations

Nelson W. Aldrich has been made head of the newly created industrial relations department of the Utah Copper Company, Kearns Building, Salt Lake City, Utah.

### Alloy Steel Specialist

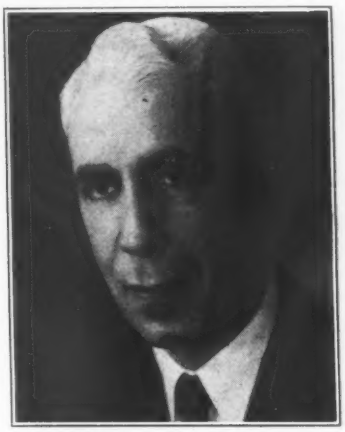
T. L. Kishbaugh, vice-president of the Earle M. Jorgensen Co., Los Angeles, has accepted an appointment as a dollar-a-year man with the War Production Board in Washington, D.C., where he will serve in an advisory capacity as an alloy steel specialist.

### Heads New Committee

At the September dinner meeting of the Mining Association of the Southwest, a committee to study the silver production situation was formed to report on the advisability of organizing a silver division. Gerard Remington, owner of a silver mine, was elected chairman. He will be assisted by Percy Hart, George Wyman, Nelson Sweetzer and B. M. Snyder.

### To Serve Our Country

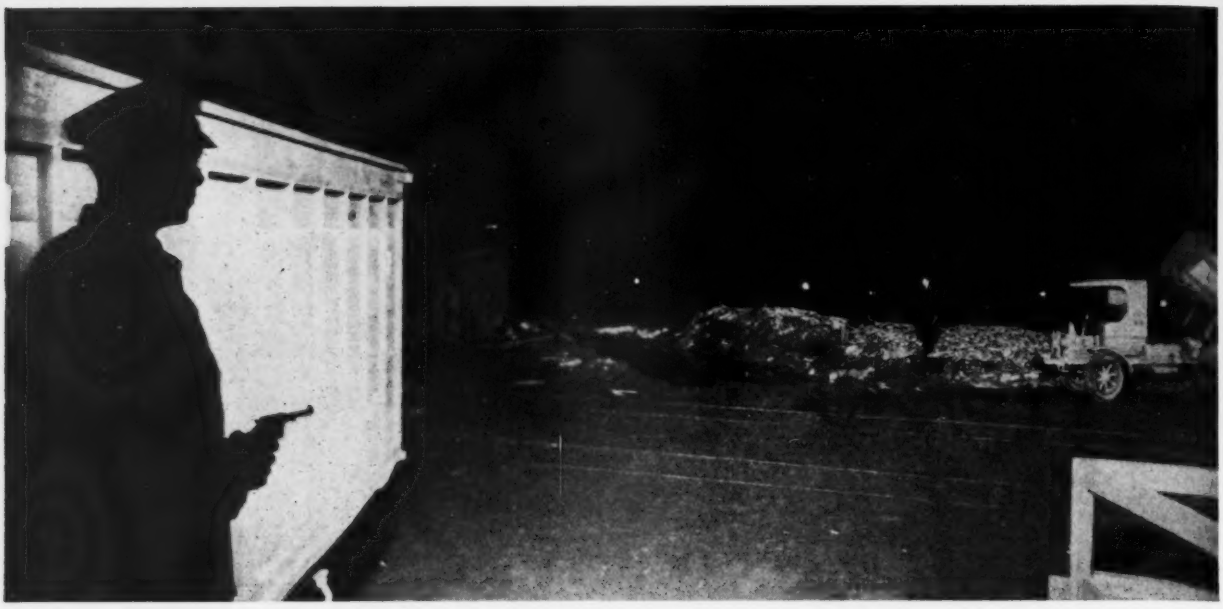
Alexander R. Heron, former industrial and public relations director of Crown Zellerbach Corp. and Rayonier, Inc., and who recently became a vice president of Crown Zellerbach, has been granted a leave of absence to go to Washington, D.C., where he will take up active duties



**ALEXANDER R. HERON**
**Eagles on his shoulders**

as chief of the personnel branch, Service of Supply, U. S. Army. His rank will be Colonel.

C. J. Middleton, district traffic manager of United Air Lines in Seattle, has been sworn in as a captain in the air transport command; Warren G. Tilton, head of the Forest Conservation department of the West Coast Lumbermen's and Pacific Northwest Loggers Association, has been called into the Army as a captain of Engineers; Lawrence J. Hoffman, partner and manager in the Kinney Shipping Co. left Portland to enter the army quartermaster corps at San Francisco as a major; Clyde Edmondson, Redwood Empire Association general manager, has been commissioned as a lieutenant in the Navy; and Glenn Hall of Boeing Aircraft's purchasing staff has resigned to join the Army.



# Sabotage— New Light On Subject!

***Individual Acts, Although in Some Cases Inspired by a Master Enemy Agent, Instead of Being the Work of Discontented Groups, As Is Frequently Supposed***

SABOTAGE, lots of it, is going on at the present time, but it is being committed by individuals, not by groups, the Plant and Building Protection School sponsored by the San Francisco Civilian Defense Council was told September 11 by Captain Paul T. Wolfe, Deputy State Fire Marshal of California.

The situation is serious, but by alertness and diligence it can easily be overcome, he said. Here are some of the situations and remedies dealt with by Captain Wolfe:

One of the best ways to find the dangers and the remedies is to have men in the plant write out how they would go about committing sabotage and preventing it.

Forty-seven so-called religious organizations are subversive in nature. Saboteurs are so-called good Americans, not foreigners.

Much sabotage is done by unwilling victims of some master saboteur who holds over them the threat of exposing some personal failing of the victim. This leader may have several individuals in the plant under his thumb at one time. Some plants have an office where advice and even legal counsel will be given employees by some man not connected with the plant.

Fire extinguishers frequently are tampered with by saboteurs. To circumvent the usual test of blowing into the hose of an extinguisher to determine whether it is in working condition, saboteurs will put steel balls or even gasoline in the hose to provide the desired back pressure. The materials they substitute in the extinguisher will spread fire. Covering extinguishers with quick-drying lacquer enables detecting whether they have been tampered with.

Don't have watchmen punch boxes in regular routine through the plant; this is a sure way of giving a saboteur 55 clear minutes working time. Alternate, skip, get irregularity. Doberman Pincher dogs which no one but the watchman is allowed to feed, thus becoming one-man dogs, have been found helpful in assisting the watchman's work.

The air hose has been found cut on 27 box cars at the same time. One firm runs freight cars on a trestle where they can be inspected underneath before spotting on the siding for loading. One hundred automobiles in Los Angeles had sugar in their gas tanks, causing much damage; tires have been punctured in parking lots. Fires at dusk were found to come from metallic sodium beans distributed in the middle of the afternoon, catching fire when dew fell on them.

Unbroken log booms around docks are good preventives of fires from gasoline poured on the water around shipyards.

The plant fire chief should have supreme authority in the plant, and not be subject to municipal fire authorities, because so many new chemicals are being used that ordinary extinguishing methods may simply spread fires. The plant fire corps should be the only men to put out fires, for the same reason.

Don't try to open home-made bombs or suspicious suitcases, unless you do it by cutting in the side or some other method which the saboteur does not expect you to employ.

Sufficient chemistry is taught in high schools that opportunities to make wrong use of them are known to a great many people. In a recent instance two boys had prepared a chemical bomb in a tomato can that they placed in a drain where it would have blown up a dam if it had not been discovered in time.

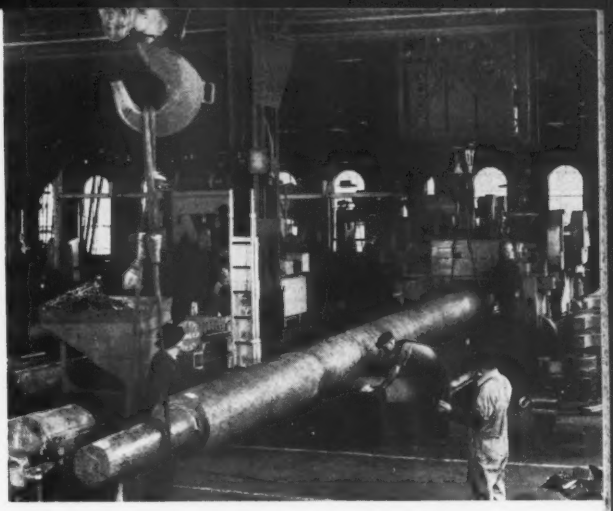
Some people set fires for pleasure . . . even plant firemen trying to show off.

There is only one plant in California really adequately protected against all sabotage. Here the employees have two lockers; after leaving their clothes in the first one, they walk 30 feet stripped through a shower bath and then get their working togs out of the second locker.

Transformers can easily be short-circuited; connections to them should be protected. Fire hydrants should be inspected; it is an easy matter to block them with fire so they will not open.

There should be separate containers for different kinds of waste rags. Barrels and buckets should be covered to prevent oil or chemicals being thrown into them either by mistake or deliberately.

• "Let's try this new one for size." Mechanic-members of the Boeing B-17 Flying Fortress crews test long-barreled machine gun located back of the wings in waist of the substratosphere bomber. More guns elsewhere



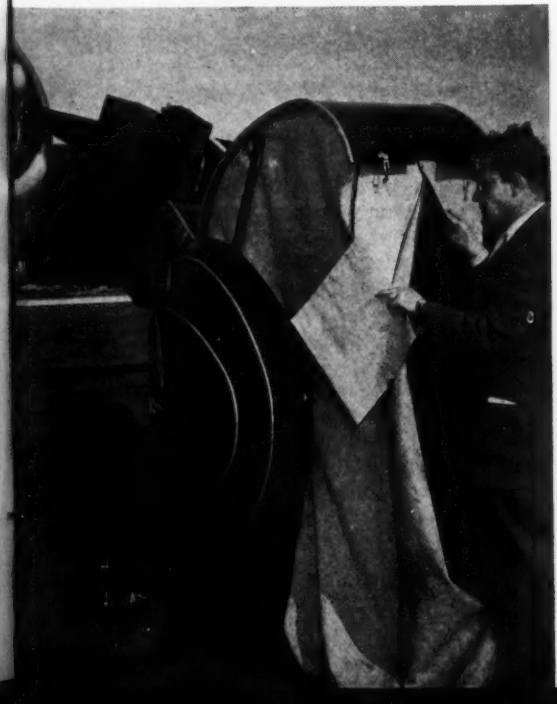
• Southern Pacific helps build ships for the Kaiser yard in Portland by turning out plate bending rolls in Sacramento locomotive shops

• (Left) Remler is first radio winner of Army-Navy award. Lt. Col. Wardell gives two oldest employees in service "E" pins

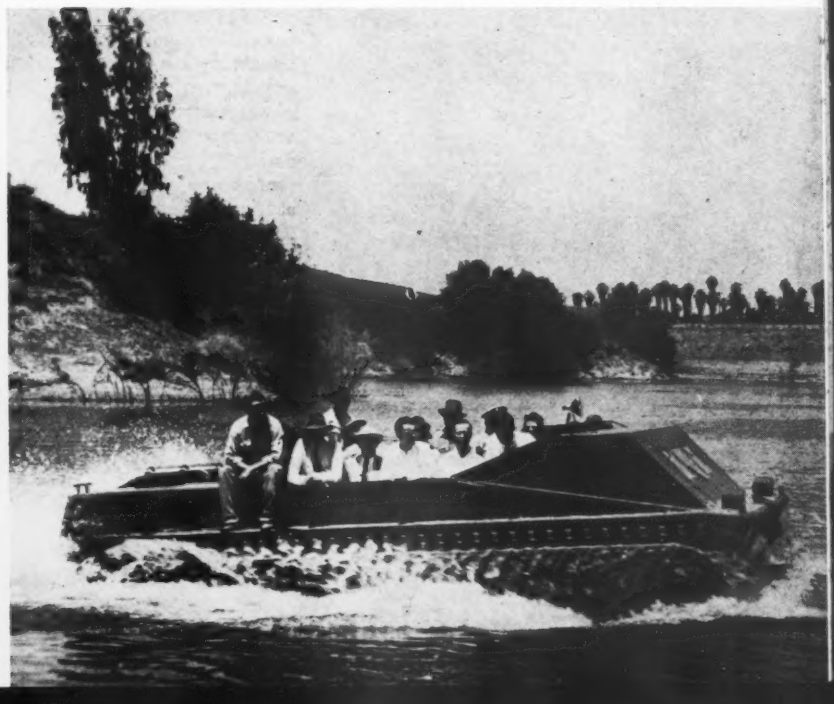
# WESTERN INDUSTRY In Pictures

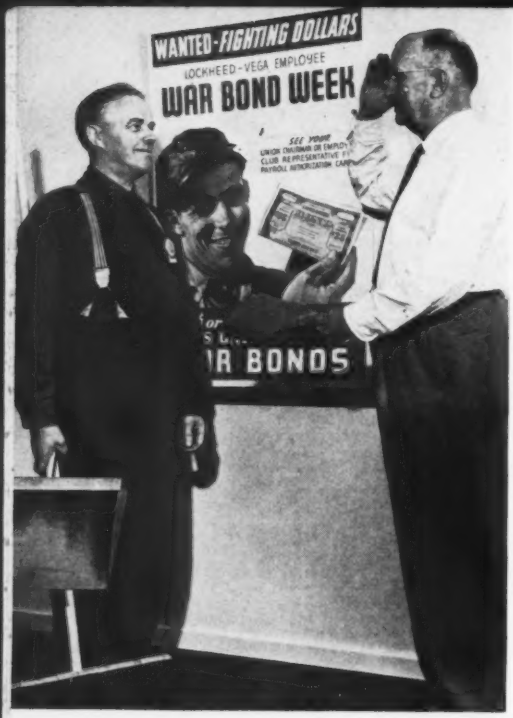
• (Right) Logs going down to the chute in a Pacific Northwest mill help swell output of materials building up victory in war

• Tom Triplett (below), inventor of portable X-ray trailer for detecting airplane injuries on the field, develops plate in his darkroom



• Navy's new "alligator" amphibian tank, built by Riverside plant of Food Machinery Corporation, gets tryout in irrigation reservoir. Doubtless is tough customer in battle, but looks like amusement park concession here






**• War is an equalizer. Arthur Hales, day shift janitor at Vega Plant No. 1, a "General" in the vital bond sales drive, receives the salute of his "Aide," H. H. Esseystyn, plant engineer**

# Soldiers of Production

***Prize Award and $1,206,000 In War Bond Subscriptions Result of 5-Day Campaign***

BY PUTTING on a five-day Second Front" campaign, organized by the Employees Victory Committee and conducted on the plan of an army going into battle, Lockheed and Vega employees got 97 per cent participation in regular payroll deductions for War Bonds, amounting to $1,206,000 and won the U. S. Treasury Department's Bulls-eye Flag. The banners were presented on September 15.

The true War Bond slogan, it was explained to all employees, is not "buying and giving," but "loaning and saving," and the "Second Front" is the "home responsibilities, as follows:

1. The problem of financing the war. Dollai are just as important as bullets and planes. Every citizen at home has the responsibility of putting his dollars to work, as well as brains and brawn, if victory is to be won.
2. The spectre of inflation which threatens to rob every citizen of his purchasing power, no matter how much his wages are, must be beaten, and
3. Each citizen has the responsibility to himself and his family to build up a reserve to enable him to win over his problems of the peace after the war.

The Victory Committee was named to serve as the General Staff. By an alphabetical system, there was chosen for each shift within each department one "General," whose "Aide" was the department head or foreman.

Serving under each "General" were several "Colonels" and "Colonel's Aides," and under them there were the "Majors" each of whom was assigned to contact five "private soldiers" and secure their signatures on payroll deduction authorization cards.

Subscriptions were voluntary, and there were no "or else" threats employed. But this personal contact, together with the general excitement of posters, bulletins, war from communiques, public address system announcements, bands playing and "Bondometer" flags showing how each plant or shift was doing in comparison with others, sent these soldiers of production "over the top" at the "zero hour" with all the dash and enthusiasm shown by the Marines in cleaning out the Solomon Islands.

Special citations for "bravery" were given in the communiques of the company newspaper to those employees who did something unusual in the "battle," and those departments that were falling slightly behind the others were written up as "meeting stiff opposition from the enemy" and, when they finally did catch up, as "rallying their shattered forces and sweeping Axis positions with a furious attack that annihilated the enemy."

There was even one "Lost Battalion" on the swing shift which, having failed to report after the first day, and which could not be contacted by telephone, "was believed entirely surrounded and cut off." The General Staff dispatched reinforcements to the relief of the "Lost Battalion."

Ten thousand dollars in War Bonds were donated by the company as awards in prize drawings, which were run just like Bank Night. There were three separate drawings, with respective first prizes of $1250, $750 and $500 in War Bonds. To be eligible for the drawings, the employee had to pledge at least 10 per cent of his salary.

## Control Quality By Statistics

Application of statistics to the problem of quality control in industry, to eliminate waste and reduce the number of rejections in war plants, was taught to a number of production executives of coast plants at Stanford University in July and in a repeat course at Los Angeles last month.

W. Edwards Deming, head mathematician of the U. S. Census Bureau and recently adviser in sampling to the Chief of Ordnance in the War Department, Charles R. Mummery of the Hoover Company and Ralph E. Wareham of General Electric, were among the instructors.

The statistical method utilizes a graphical method of plotting periodically—by minute, by hours, or by days—the quality of the material or product coming off the production line. Taking into consideration the normal chance factor, the production man is able to compute within what limits the rejections may fall before he starts looking for the trouble.

By going to the source of the trouble on the basis of his statistical computations, he is able to lower the amount of product inspection required and cuts down the number of rejections. In this way he saves materials and makes better use of his personnel and equipment.

## Steel Proposition

• The recently organized Pacific American Steel & Iron Corporation of Bellingham, Wash., which has been seeking a $50,000,000 loan from the RFC, has options on iron, lime and coal properties stretching from Vancouver Island to Pierce County and east to the Blewett Pass area, according to R. W. Greene, Bellingham attorney, who is one of the incorporators.

## Diving Regulations

• Safety regulations governing diving are being prepared by the California Industrial Accident Commission, governing the time permitted under water at various depths and the length of time required to come to the surface. They also call for having, where the diving operations equal or exceed 72 feet in depth, a decompression chamber available at all times, not more than three hours travel by train, automobile, boat or airplane.

## Replaces Jap Imports

• An annual output of 200,000 pounds of agar, used as a culture medium to detect bacteria in food and water supplies, is coming from the San Diego establishment of American Agar & Chemical Co. This is one-third the former Japanese output which dominated the market. Agar is extracted from a sea moss.

## Yucca Fibre Mill

• Fifteen tons daily of yucca fibre will be turned out from the first of three mills to be built near Kingman, Arizona, by the General Fibre Products Corporation, of which C. L. Wells is president. Initial cost of the plant will be $150,000, and ultimate capacity will be 60 tons.

# Hotter Than w. k. Hinges

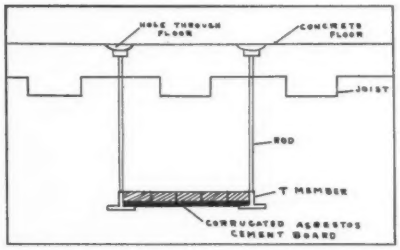
***But Asbestos Overcoat and Carpet Make Insulation Job Possible Without Shutdown***

ASBESTOS was the answer to the problem of insulating the floor above the clinker coolers at the Southwest Portland Cement Co. plant at Victorville, Calif., without shutting down the plant for a long cool-off, according to *Asbestos* magazine.

Cement is made by burning crude rock to clinker and then grinding up the clinker. At Victorville the clinkers pass from the kilns to the burner platform on the upper floor of a two-story building, from which they drop to the coolers below.

So much heat was radiated from the coolers and the kiln hoods that work on the platform was difficult, despite a heavy concrete floor above the coolers. It was also impossible to work on the lower deck long enough to install insulation in the usual way without shutting down operations.

W. H. Cleary, chief engineer for Southwest, had his men drill a series of holes in the floor, drop two-foot bolts through them and fasten horizontal members shaped like inverted Ts at the bottom ends of the bolts. Vertical sections of the T members measured $\frac{3}{8}$ inches and had a 4-inch spread and a 3-inch web.




When these hanging supports had been installed at intervals of a few feet all across the floor, workmen went in from below to lay the insulation. Clad completely in asbestos and with a fan trained on him, a man would walk in on the platform above the clinker cooler and lay down a sheet of corrugated asbestos cement between two T members—and then walk right out again. He was followed by a second asbestos-clad workman who put down the insulation.

Since the workman had to be in the lower room for only a matter of seconds, he was able to stand the heat without difficulty. There were no accidents and no ill effects were experienced by any of the men.

Almost within a matter of minutes, a whole suspended ceiling of corrugated asbestos-cement with insulation material on top of it had been laid below the regular ceiling. Where the previous temperature on the platform above had been around 140 degrees, it was cut down to a comfortable working level.

## Over Two Billions

• Washington state war contracts up to July 1, 1942, total about two and one-half billion dollars. The division is as follows: aircraft, $1,065,676,000; shipbuilding, in which Washington ranks third in the country, $708,866,000; other war equipment, $157,786 . . . facilities, $477,555,000.

## Head Protection

• Adequate head protection has been made compulsory by the California Industrial Accident Commission for employees working on building ways, hulls or in locations where the hazard of falling objects normally exists. The Commission also recommends that all workers wear hard-toe shoes.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# Mobilizing Manpower Is Problem Ahead

***Everybody at Washington Talks About It, But Nobody Wants to Stick His Political Neck Out***

**One of the best-informed writers at the Nation's Capital, Arnold Kruckman, presents each month authoritative comments on political developments and their practical application to industry of the West. Any reader who wishes additional information may write to him directly, using business letterhead, at 1120 Vermont Avenue, N.W., Washington, D.C. Inquiries will be answered free of charge. You also are invited to contact him personally in Washington. Copies of pending congressional bills may also be obtained free of charge.**

By ARNOLD KRUCKMAN

TOTAL mobilization of manpower to relieve your West Slope troubles, and troubles elsewhere, is expected to become a serious object of action along about the latter part of November, after the elections.

Meanwhile Prettyboy McNutt and other gentlemen and ladies in and out of Congress are making it a subject of much serious conversation. Like the weather, everybody talks about it, and every political body thinks something should be done about it, but almost no political body wishes to stick its neck out in the doing.

Donald Nelson recently called 20 leaders of AFL and CIO together here, and included this topic on the agenda to devise far greater participation by Labor in the running of WPB. About the same time McNutt, the War Manpower man, brought together twelve prominent women, including Miss Jenny Matyas, International Ladies' Garment Workers Union, San Francisco, and told them they must help to mobilize 4,500,000 woman war workers by the end of this year, and 6,000,000 by the end of next year. They should be over 18 and under 45.

Miss Perkins also got some others together and told them 15,000,000 persons are now engaged in war work, and that 20,000,000 will be at work the end of 1943; but she anticipates the total of women will not be more than 4,000,000.

Aside from the need of workers in airplane plants, shipyards, and ordnance plants, McNutt tells us your greatest need on the West Slope is in the mines. He says you need many men in mines that produce copper, lead, zinc, manganese, mercury, chromium, molybdenum, tungsten, and vanadium. Others tell us there also should be plenty mining of iron and bauxite and silver, as well as many other ores and minerals on the West Slope.

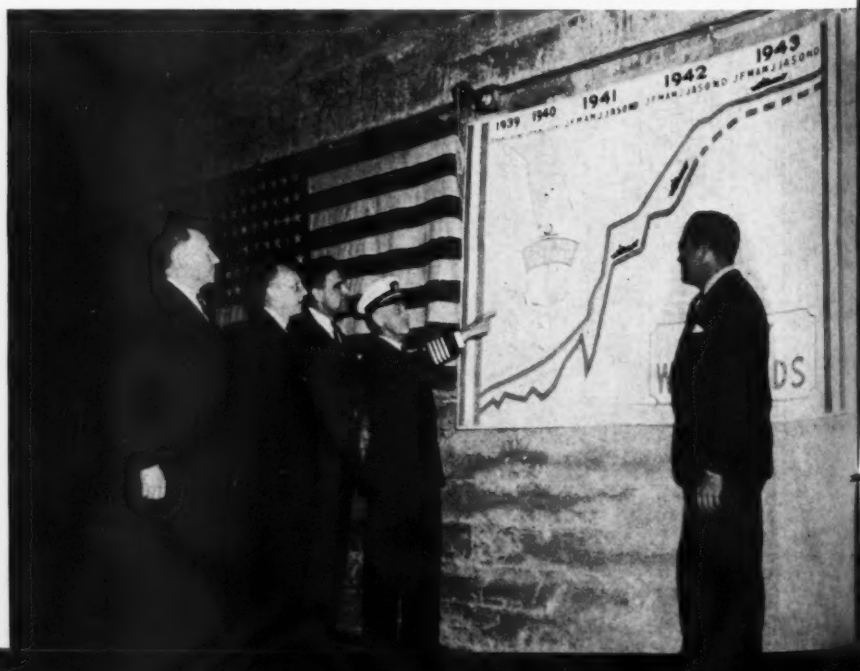
There is so little silver left now that the Treasury has frozen its "free" stock, and has told the various industries using it in place of copper to get out and hunt it. Mexico, of course, as you know, has been permitted to raise its price from 35c an ounce to 45c an ounce, in order that it may meet some of its pressing tax needs. That is simply another way of providing lend-lease help without any strings on the accommodation. Trouble is, according to our Washington informants, miners out West are not paid enough wages. That is the reason, they say, Government will see to it that laborer miners in Arizona now receiving $4.60 a day will be paid the same wages as laborers on the surface who get $7.90, while skilled miners who receive $7.20 a day will be boosted to $12.20 per day, which is the wage of the skilled construction workers on the ground.

Mexican workers have been imported by the Government for emergency work in the sugar-beet harvest and it has been suggested they might be used in the mines where workers are now so short. There will be a growing shortage in mine workers because it apparently has finally been definitely determined to work every mine that may be expanded or developed.

There is little hope that the tangle between War Manpower, Selective Service, WPB, Army, War Labor Board and other agencies over the supply of workers for airplane factories will be straightened out until the next amplified and amended draft law is enacted to completely mobilize the manpower of the nation. The yardstick that determines now whether a man is desperately needed by the industry in which he works is the question whether it takes less than 6 months training of a new worker to replace him.

The War Manpower people have a fixed idea that a large part of the workers in the airplane industry may be released and replaced by women. They urge women to go into training and then continue to train for successive jobs in higher grades. It is quite possible this idea will be hardened into law.

**• PRODUCTION RALLY. Enterprise Engine & Foundry Company unveiling of mammoth chart showing 1100% increase in last year of supercharged marine diesel engines. Frank Brown, Moulders Union; C. M. Sayre, Enterprise General Manager; B. F. Carter, Maritime Commission; Captain A. B. Court; Sales Manager Charles G. Cox (left to right) addressed 1200 on day shift**



They also have worked out in much detail a plan by which men in less essential industries will be requisitioned for more essential jobs.

ODT reports there are particular shortages of personnel in transportation activities in Los Angeles and San Francisco. In addition to the use of women in offices, the example of San Diego, San Francisco, and Salt Like City is held up to the rest of the country as demonstrating the capability of women to operate vehicles, such as street cars, motor buses, and even trucks.

It is the practice of raiding for workers that prompted the War Manpower Commission to create all the twelve states of the Western Slope as a critical labor area. The pattern devised for the Western area is regarded as a trial to determine similar operations elsewhere.

In effect, the system takes the control of the worker away from the employer. The employer must keep the workers, except for gross neglect, but the worker may take a better paying job when he can obtain it, or if he can obtain a full time job if he is employed on part time. He also is justified in shifting if he can get a job nearer to his home. The worker also continues to have the privilege of full protection by his union. If he has a complaint or wishes to shift he makes his appeals to the local or regional Labor-Management Committees.

Apparently the whole problem of relations between the employer and the worker will be directly controlled by the President. It also is anticipated that all industries will be brought into the new 48 hours work-week pattern set-up for the lumber workers of the Northwest.

National standards for apprenticeship have been adopted, the direction focussing in Federal Security Agency offices in Denver and San Francisco. Recent regulations prohibit anyone under 18 from working in hazardous lumber employment.

## Precision Plywood

• Woodcraft Engineering Company, who will manufacture precision molded plywood aircraft sub-assembly, are establishing a factory in Los Angeles. They will fabricate wood products direct from metal working blue-prints, and expect to achieve tolerances never before approached in the manufacture of wood articles. M. C. Phenix, long identified with the furniture industry in Southern California, heads the concern. An investment of $150,000 is involved. The plant will occupy 60,000 square feet of floor space and employ 50 experienced wood workers.

## More Sugar Beets

Crop forecast for California sugar beets as of August 1 is 2,248,000 tons, almost up to the record 1940 yield of 2,903,000 tons.

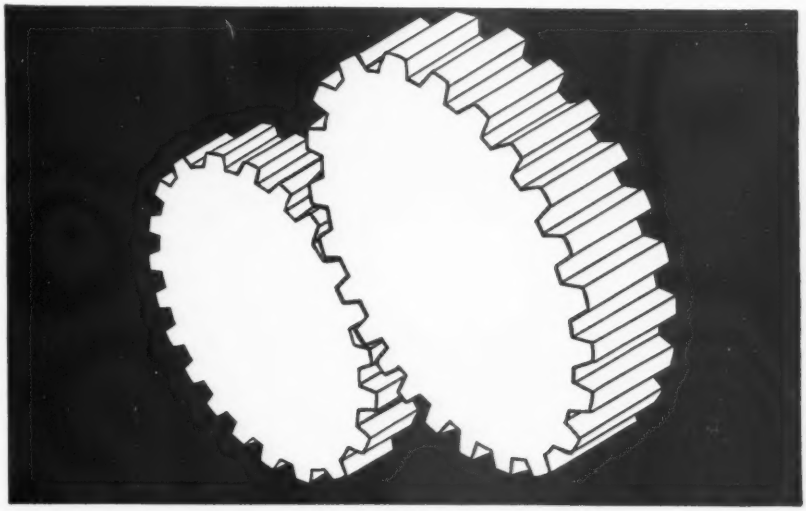
## Thread and Drill Standards Planned

A recommended commercial standard for screw threads and tap drill sizes is being sent out to the industry by the National Bureau of Standards for written acceptance.

It covers the predominating sizes of American National screw threads in the following series and fits, with the corresponding tap drill sizes:

Coarse Thread Series, Sizes No. 1 (0.073 in.) to 4 in., Classes 1, 2, 3 and 4 fits. Fine Thread Series, Sizes No. 0 (0.060 in.) to 1½ in., Classes 1, 2, 3 and 4 fits. 8-Pitch Thread Series, Sizes 1 in. to 6 in., Classes 2 and 3 fits. 12-Pitch Thread Series, Sizes ½ in. to 6 in., Classes 2 and 3 fits. 16-Pitch Thread Series, Sizes ¾ in. to 4 in., Classes 2 and 3 fits. Extra-Fine Thread Series, Sizes ¼ in. to 2 in., Classes 2 and 3 fits.

Tap drills for: No. 1 to 3¾ in. Coarse Thread Series, No. 0 to 1½ in. Fine Thread Series, 1 in. to 3½ in. 8-Pitch Thread Series, ½ in. to 3½ in. 12-Pitch Thread Series, ¾ in. to 3½ in. 16-Pitch Thread Series, ¼ in. to 2 in. Extra-Fine Thread Series.

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# LABOR
## AND THE INDUSTRIAL WEST

A PLUMBER who turned driller, two guards who became pipefitters, an ex-soldier who leads a gang of riveters, and a welder's leaderman were cited for "outstanding service in the building of ships for American victory" at launching ceremonies September 20 at Lake Washington Shipyard, Houghton, Wash.

Earl Davison, schedule supervisor of the Training-within-Industry program of the War Manpower Commission, singled out the five men whose bright ideas about shipbuilding enabled the U.S.S. Onslow to be ready for christening in faster time than any of the six other warships already built at the Lake Washington Yard.

"You are soldiers of production," he told the five shipyard workers. "Yours is the secret weapon that will win this war—brains plus brawn, the ingenuity that invents the shortcut."

The men he cited are:

George "Red" Hollar and F. W. "Charlie" Jellison. They collaborated on a cap for pipe bending. As a result of dissatisfaction with wooden plugs used to hold sand in pipe while bending, Hollar and Jellison figured out a metal cap to fit over the end of the pipe. The cap is fitted with a plunger and screw adjustment so that the plunger can be forced into the pipe, holding the sand tightly packed in the pipe.

Thus, the slack caused by sand grains melting and running together when the pipe is heated can be taken up. The result is much more perfect bends. Saving of time is effected because the cap can be removed quickly, while plugs sometimes stick and are difficult to take out. Also, plugs are good for only one or two uses, while the cap is good indefinitely. Caps also save time in preparing the pipe for bending, saving on each job a half-hour.

Hal Kitchen, welder leaderman, developed a ventilating system for welder's helmets that expels dangerous gasses from within the helmet. By mounting a small pipe on the forehead support inside the helmet and punching a series of small holes for the length of the pipe on both top and bottom, air can be forced to blow both down and up, keep gases from the welder's face and forehead. A small air line is connected to the pipe to give the necessary air pressure.

The device is especially effective in close quarters and where danger of galvanizing poisoning is present. It has been tested by various welders at Lake Washington Shipyards and been pronounced highly satisfactory under many varying circumstances.

Jimmy O'Donnell, driller, mounted two level glasses on top of his drill to give him a two-way level gauge. The glasses are adjustable to any angle. By watching the glasses, the driller can keep the drill straight for all holes and by changing the angle, can drill holes at any angle—and all will be uniform. The device saves much time in straightening and adjusting the drill.

Frank "Jack" Frost, riveter leaderman, figured out a device that eliminates much of the work of bucking up shell and bottom rivets and eliminates most of the danger of loose and leaky rivets. The device is two metal brackets that clamp to the hull frames, holding a plank in such a position that holderons can place a jack between the plank and the rivet head.

The arrangement can be set up for any length of plank and can cover the space between two frames—which are the ribs of the ship—or several. After all rivets covered by the setup are finished, the brackets and plank can be moved quickly to a new location. The saving is in grueling work by the holderon and in extra work cutting out faulty rivets and replacing these with good ones.

### Ask Janitors For Protection Ideas

Industrialists will be surprised at what good suggestions for plant protection their janitors can give them, according to M. K. Rause, chief engineer of the schedule department, Board of Fire Underwriters of the Pacific.

Employee cooperation in protection programs, he told the Plant and Building Protection School in San Francisco sponsored by the San Francisco Civilian Defense Council, makes workers feel they are part of the plant and responsible for its safety.

**• Mrs. Margaret Seeds, Vega worker, widow Ferry Command pilot, invests $5,000 of British grant in war bonds for herself, daughter Bette Jo (left) and Patsy Morris (center), daughter of Seeds' deceased co-pilot**

# Overmotoring Is Needless

### *Oversize Equipment Takes Material and Labor That Could Be Used Elsewhere*

*By* W. C. SMITH*

BECAUSE of "overmotoring," up to 25 per cent more material and labor are now going into the production of motors than is needed for the work the motors are being called upon to do. Motor users and specifiers can help greatly in conserving critical materials and in helping motor manufacturers produce the maximum number of motors needed to win the war, by selecting the motor size on the basis of the actual expected duty without overstress on additional safety factors to take care of unexpectedly heavy loads or to lengthen motor life.

Conservationism in motor selection, however commendable in normal times, must be discarded for the duration. Although modern motors are considerably lighter for the same horsepower than those of a few years ago because of better available materials, they are just as conservatively rated by the manufacturer who has already designed into the motor a margin of safety to meet reasonable overloads.

"Overmotoring" also affects almost everything else in a plant's electric chain including control, distribution, and generation since the capacity of the power system is very often based on the installed horsepower of motors. For this reason, in the distribution system lies our greatest opportunity to save copper through careful motor selection and, of course, through good system design."

In any electrical installation, only a small portion of copper used is contained in motor windings. The bulk is in the distribution system—in the cables, fuses, etc. Let us take, for instance, an average industrial plant typical of many now being built for war production. Let's assume that 13,200,-volt power is brought to this plant and then stepped down to motor voltage, and that the total installed motor capacity is 10,000 horsepower, mostly in squirrel-cage motors. The plant is designed for 4000 kva capacity, or 40 per cent load factor.

Now, an average 7½ to 10 hp squirrel-cage motor requires not more than 2 to 3 pounds of copper per hp. Under the most ideal conditions—440-volt motors powered from a materials-saving load-center system where power is stepped down near the utilization area—up to five pounds of copper will probably be needed for each installed horsepower. If motors are selected 15 to 25 per cent too large, then in addition to needless use of materials and facilities in motor manufacture, the amount of excess distribution copper is apt to be 7500 to 12,500 pounds.

The excess copper used would be much more if the old-fashioned distribution system of carrying the power through the plant at low voltage were used. Worse yet, if 200-volt motors are chosen instead of 440-volt (this has no effect on the amount of copper used in the motors) the distribution copper will go up to 10 pounds per hp with the load-center distribution system and up to 18 to 20 pounds with the old-fashioned system. The reason for this, of course, is that much more copper is needed to carry the lower-voltage power to the motor.

A further evil of "overloading" that cannot be overlooked or disregarded is its effect on low power factor—another avoidable waste. Many splendid plants are probably operating at 40 per cent power factor today, primarily because of heavy "overmotoring."

All concerned can be of great help to the war effort by adherence to the following principles:

1. Select motors closer to their actual duty—avoid piling up "safety margins."
2. If in doubt, do not arbitrarily select the next larger rating; perhaps the next smaller rating will do the job satisfactorily.
3. Utilize, wherever possible, the available service factor. For instance, the motor will not be injured if the service factor of 1.15 is used in some cases on the 40 C motors, although continuous operation at the resulting 50 C rise may mean that the insulation will last only 10 years rather than 20. Even more loading, up to 125 per cent, can be utilized when ambient temperatures less than 40 C are expected.

   (Of course, always check other factors such as starting or maximum torque, etc. Sometimes these, rather than the continuous rating, determine the motor size.)
4. Don't use integral horsepower motors for voltages less than 440 volts, unless unavoidable.
5. Bring high-voltage power to the load center.

*District Engineer, General Electric Company, San Francisco.

## Industrial Safety Engineering Courses

Additional courses in industrial safety engineering for superintendents and foremen to those already under way at Stanford University are also being started by the University of California.

R. E. Donovan, chief safety engineer for Standard Oil Co. of California, will be the instructor for one class starting Monday evening, October 5, at Wilmerding High School, San Francisco, and B. O. Pickard, well known safety engineer, for another Monday evening class in the Engineering Building on the campus at Berkeley and for Tuesday evenings at Oakland High School.

Tom Soule, chief safety engineer for the Industrial Indemnity Exchange, will teach two classes at Richmond in U.S.O. Hall, one on Monday evening and the other a day class from 12 to 2:30 for swing and night shift men.

Information about these courses may be had from P. E. Spitzer of the National Committee for Conservation of Manpower in War Industries, 200 Bush St., San Francisco, telephone YUkon 1639.


**L. A. SHIP**

Building ships for the U. S. Navy is the war assignment of Los Angeles Shipbuilding & Drydock Corporation, pioneer shipyard of Southern California. Last month the yard launched the U.S.S. Ajax, largest ship ever built in this area. Los Angeles Ship is another of the clients served by Security's War Loan Department. The facilities of this department are available to help you with your war credit problems. Call us today.

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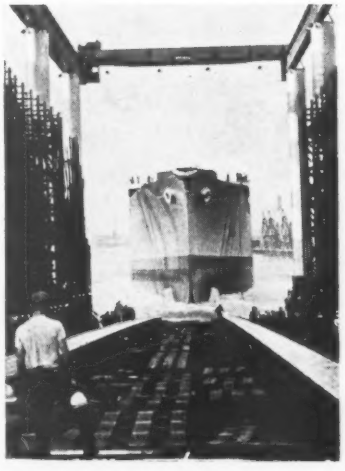

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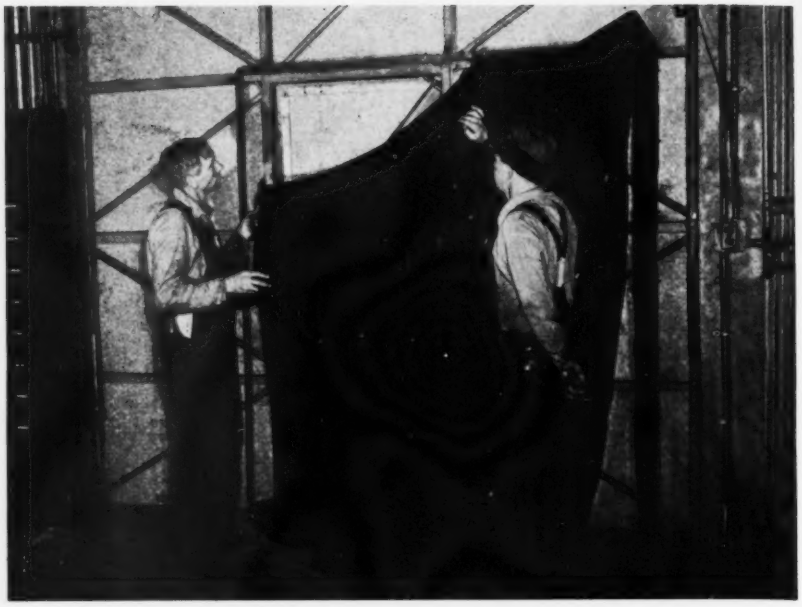
# Blackout Breathing

By C. E. PARKS*



• This blackout canvas curtain for protecting the pilot doors of large rolling doors hangs from pegs

WITH the dim-out reminding us that practically all high government, army and navy officials have been predicting "token" bombings, particularly on coastal areas, it is timely to consider some of the incidental effects of blackout preparations.

It is interesting to note that on practically all requests for bids on sub-contracts, manufacturers submitting such bids must state definitely the blackout precautions which have been taken to safeguard their plants. No regulations have been laid down yet by the government that each and every building must be equipped for blackout, but they may come at any time.

One of the dangers accompanying such preparations is that ventilation may be blacked out at the same time. We have war-work buildings bulging with additional workers, machinery, raw or finished materials, with ventilation generally inadequate to handle the extra load.

On top of that, for blackout precautions, windows are painted and closed, or else boarded up, shuttered or provided with light-tight (and usually air-tight) shades or blankets. The only air inlets are normal building openings, such as spaces around window frames, door frames, etc., and even some of these are blocked.

Under normal conditions of occupancy, such stifling of incoming air would be detrimental, but under war-crowding, an almost impossible situation develops. More people, more machines, more materials are packed into limited floor space. Fifty desks may be sandwiched into an office designed to accommodate 25 conveniently. Tool rooms, machine shops, foundries, assembly lines, are crowded with new workers and new machinery. Bad air, odors, excessive heat are depressingly apparent and result in fatigue of the workers, an increase in scrapped products, a decrease in production levels.

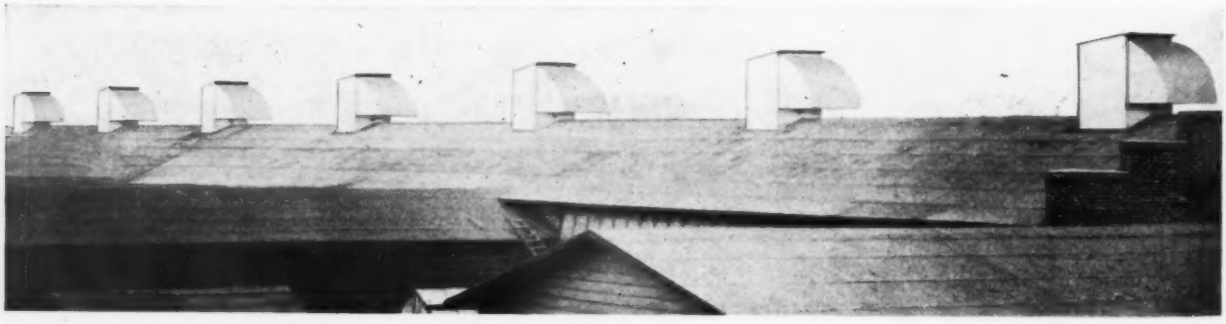
Where inflammable materials are stored, crowding may bring about a concentration of fumes which presents the danger of explosion from a careless spark. Few people stop to realize that an explosion never happens out-of-doors, where air dilutes the fumes and prevents a concentration of them. By similarly diluting the air indoors through rapid air change, dangerous concentrations of fumes can be eliminated.

It is obvious that if conditions within a building make it impossible to continue operations at near peak efficiency during "alert" or blackout periods, our nation suffers. Such delay in one plant might be comparatively unimportant, but when one adds to that the delay and confusion arising in plants in other parts of the country because parts from plants in the blackout area do not arrive on schedule, the total time wasted in our war effort becomes a staggering sum.

Where blackout ventilation equipment is installed, management has been agreeably surprised at the results. Even under war-crowded conditions, the rapid change of air has produced more effective ventilation than was possible in the same building under normal conditions with antiquated air moving equipment.

*Pacific Coast District Manager, Ilg Electric Ventilating Co.

• Ventilators in the roof operated by fans help to draw off stale air resulting from overcrowded conditions in many factories



# WESTERN TRADE WINDS

## NEWS ABOUT THOSE WHO DISTRIBUTE AND SELL INDUSTRIAL EQUIPMENT AND MATERIALS

**Westinghouse Electric & Manufacturing Co.** have announced several new appointments recently in the Pacific Coast area.

J. S. Hagan has been named Pacific Coast district manager of the manufacturing and repair department; Walter H. Thompson, district manager for the lamp division; Hugo E. Becker, supervisor of the newly created maintenance sales department; W. L. Winter, sales engineer for the central station and transportation division; and Robert R. Richey goes to San Diego to head the company's activities there.

A. E. Hitchner, formerly Los Angeles manager, has been appointed to an executive post at East Pittsburgh, Pennsylvania, the company's home office headquarters.

**Maydwell & Hartzell, Inc.,** 158 - 11th St., San Francisco, have been appointed exclusive sales representatives in California for the Pittsburgh Screw & Bolt Corp., Pittsburgh, Penn.

**Hercules Equipment & Rubber Co.** now are occupying their new building at 435 Brannan Street, San Francisco. In addition to carrying stocks of rubber goods and fire-fighting equipment, they manufacture molded rubber goods, rubber rollers and other rubber items along with gaskets. There are three service offices on the ground floor so that customers are served promptly and truck drivers are not delayed in making pick-ups. Hercules are one of the largest Goodrich distributors. P. M. Paulsen is president of the company.

**Carl M. Cleveland** has been appointed advertising manager for the Boeing Airplane Co. in the public relations department of the company in Seattle. He will have charge of the administration of all Boeing advertising.

Previously, Cleveland had been western advertising manager of the Great Northern Railway with offices in Seattle.

**Standard Oil Co. of California** has selected Long Beach as the location of a new district sales office. C. R. McMillin has been appointed district sales manager.

**The Pacific Electrical & Mechanical Co.** have moved to a new plant at Sixteenth and Vermont Streets, San Francisco. In their new location, they are able to have all their departments under one roof, tending to efficient operation and improved service.

**Mine Safety Appliances Co.** has moved to larger quarters at 325 Wall Street, Los Angeles, from 420 So. San Pedro. J. S. Moore is the Pacific Coast manager.

**Northwest Motor Parts Co.,** 566 First Ave., So., Seattle, are the new Western Washington distributors of Federal motor trucks.

Seven new plants and additions to existing plants in the central manufacturing district area were announced by officials of the district last week, establishing a new record in industrial expansion for that area which is served by the Los Angeles Junction Railway. Firms moving into the district or making additions include, Los Angeles Magnesium Casting Company; Graham Brothers, Inc.; Merco Company and Trojan Steel, Inc. National Auto Fibres, whose plant is in the Bandini area of the district, will carry on all its Pacific Coast manufacturing activities here.

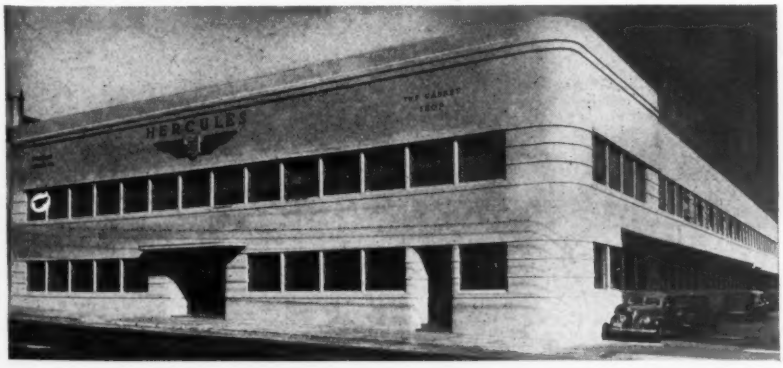
**Herbert H. Clarke** has joined the production staff of the Bemis Bag Co., Seattle. He resigned as purchasing agent for the Wheeler Osgood Sales Corp. in Tacoma.

**Brooks Equipment Corp.** of California have been formed, with offices at 736 East Washington Blvd., Los Angeles., with H. J. Wright in charge. Louis B. Krieger is in charge of the San Francisco offices, which are located at 461 Market St.

**Dawson Machinery Co.,** 1736 First Ave., So., Seattle, Wash., have been appointed direct sales representatives for the Gisholt Machine Co., Madison, Wisconsin.

**A Correction:** W. M. Fairfield is in charge of aircraft industry sales for The Fafnir Bearing Co., Los Angeles, instead of Wally Latham, as published in the September issue of *Western Industry*.

• **New Building of Hercules Equipment & Rubber Co. in San Francisco**





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# THE WEST ON ITS WAY

## ARIZONA

CAMOUFLAGE NET—**E. W. Duhame Construction Co.,** 3719 No. Central Ave., Phoenix, Ariz., was awarded a contract by the U. S. Engineer Office, Los Angeles, in an amount less than $500,000 for constructing camouflage net project for warehouses, cutting sheds, office and appurtenant work at a reception center in Pinal County, Arizona.

INTERIOR PAINTING—**J. H. Bridges,** 832 No. Ninth St., Phoenix, Ariz., was awarded a $50,000 contract by the U. S. Engineer, Los Angeles, for interior painting of military police building at a relocation center in Pinal County, Ariz.

PLAN HOSPITAL—**Architects Lescher and Mahoney,** Title and Trust Bldg., Phoenix, Ariz., are preparing plans for a 130-bed hospital and health center to be built at St. Monica's Mission. FWA approval of the project, which will cost approximately $450,000, has been granted.

RAILROADS—**Waco Construction Co.,** Waco, Texas, was awarded a contract by the U. S. Engineer Office, Albuquerque, New Mexico, in an amount less than $400,000 for the construction of railroads at an airfield in Cochise County, Ariz.

PROCESSING PLANT—**General Fiber Products Corp.,** Los Angeles, have given a contract to C. T. & W. P. Stover, Claremont, Calif., for the construction of a yucca processing plant near Kingman, Ariz. The plant is to be used for the extraction of fiber from yucca leaves for rope and other purposes. Approximate cost is $150,000.

LANDING FIELD—**J. B. Morrison Construction Co.,** 1533 West Willeta St., Phoenix, Ariz., was awarded a $500,000 contract by the U. S. Engineer Office, Los Angeles, for the construction of an auxiliary landing field at a gunnery range in Pima and Maricopa counties, Arizona.

INSULATION AND VENTILATION—**C. F. Crittenden,** 526 West Encanto Blvd., Phoenix, Ariz., has been awarded a contract by the U. S. District Engineer Office, Los Angeles, for insulating and ventilating an ammunition magazine, at a cost of less than $50,000.

DETECTION SYSTEM—**Western Electric Sales Corp.,** 4031 Goodwin St., Los Angeles, has been awarded a $50,000 contract by the Los Angeles U. S. Engineer Office for the installation of an intrusion detection system for a bombsight storage vault and work shop at a modification center in Pima County, Arizona.

HOSPITAL GROUP—**J. S. Sundt and L. M.White,** Tucson, Ariz., have been awarded a $500,000 contract for the construction of a hospital group and appurtenant facilities in Pima County, Ariz.

## CALIFORNIA

AIR BASE BUILDINGS—**Jacobson & Kikholm,** 1614 Wellington Road, Los Angeles, have been awarded a contract in excess of $1,000,000 for construction of approximately 75 buildings for a ground air support base in Riverside County. U. S. District Engineer Office in Los Angeles awarded the contract.

MORE NAVAL FACILITIES — **Geo. Pollock Co.,** Sacramento and **Guy L. Atkinson Co.,** San Francisco, have been awarded a $5,989,570 supplemental contract by the Bureau of Yards and Docks, Navy Dept., for construction of additional facilities at Naval Operating Base and Air Station, San Pedro; Roosevelt Base, Terminal Island; Disbursing and Transportation Office, San Pedro; Naval Hospital, Corona; and Naval Reserve Aviation Base, Los Alamitos, San Pedro, Long Beach and Port Hueneme.

MAGNESITE DEPOSIT — **Albert J. Calhoun** and **S. D. Furber** have annouced the discovery of a huge magnesite deposit in western Tehama County, Calif. Preliminary exploration and sampling indicate the deposit may be more extensive than the magnesite ore bodies being worked near Luning, Nev.

WAREHOUSES — **J. & B. Contracting Co.,** 5572 Valley Blvd., Los Angeles, was awarded contract by the U. S. District Engineer Office, Los Angeles, in an amount less than $500,000 for the construction of seven warehouses at a general hospital in Riverside County, Calif.

AIRPORT TAXIWAYS — **R. A. Conyes** and **Ralph O. Dixson,** 3901 Medford St., Los Angeles, will construct hardstandings and taxiways at an airport in Riverside County, Southern Calif. The $500,000 contract was awarded by the Los Angeles, U. S. Engineer Office.

CRAB CANNERY—**Hallmark Fisheries,** Charleston, Ore., have purchased property at the foot of F Street in Eureka, Calif., and will install a crab cannery. Construction work is being rushed so that the plant will be ready for operation when the crab fishing season opens December 15.

FIRE WALLS—**Emsco Concrete Cutting Corp.,** 147 Eleventh St., San Francisco, has been awarded a negotiated contract for encasing fire walls and adjoining piles in the Bay area.

WINDOW BACKING—**H. M. Keller Co.,** 4604 Hollywood Blvd., Los Angeles, was awarded a contract by the U. S. Engineer, Los Angeles, for the installation of window backing, glass replacement and appurtenant work in an aircraft manufacturing plant in Los Angeles County to cost less than $100,000.

SMALL BOATS—**Garbutt & Walsh, Inc.,** Los Angeles Harbor boat building firm, have been awarded contracts totaling nearly $1,000,000 for the construction of several types of auxiliary vessels for the United States Navy.

TRAINING SCHOOL—**Jensen, Martin & Jepsen,** 1730 So. Hayworth St., Los Angeles, were awarded a contract by the U. S. District Engineer Office for the construction of buildings and utilities at a factory training school at an aircraft plant in Los Angeles County. Estimated cost is $500,000.

CHEMICAL PLANT—**Culligan Zeolite Co.,** Chicago, has purchased a 53-acre tract at the junction of Highway 66 and Devils Canyon Road, five miles northwest of San Bernardino, as the site for a $200,000 chemical plant. Zeolite and silica gel will be manufactured.

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FIRING RANGES—**Coast Counties Construction Co.,** 150 Towt St., Salinas, Calif., will construct firing ranges at an army post in central California. The San Francisco U. S. Army Engineer Office announces the award.

HOSPITAL EXPANSION—**Griffith Co.,** 502 Los Angeles Railway Bldg., Los Angeles, was awarded contract by the U. S. Engineers, Los Angeles, for the expansion of a hospital group at an air force training center in Orange County, Calif., at a cost of less than $1,000,000.

STORAGE TANKS—**A. C. Vinnell Co., Swinerton and Walberg Co.** and **United Concrete Pipe Corp.,** San Pedro, Calif., have started work on the construction of 20 reinforced concrete fuel storage tanks at San Pedro for the Bureau of Yards and Docks. The contract was for $5,375,000.

INDUSTRIAL FENCING—**American Chain Link Machine Co.,** 1941 San Fernando Road, Los Angeles, was awarded a $50,000 contract by the U. S. District Engineer Office, Los Angeles, for the construction of perimeter and industrial area fencing at an air depot in San Bernardino County, Southern California.

NAVY MAGAZINE—**K. E. Parker Co.,** 135 South Park, San Francisco, have been awarded a $1,321,000 supplemental contract by the Bureau of Yards and Docks, Navy Department, for construction of additional facilities at the Navy Magazine, Port Chicago, Calif.

TRAINING STATION—**Engineers, Ltd.,** 605 West Olympic Blvd., Los Angeles, and **J. E. Haddock, Ltd.,** 3578 East Foothill Blvd., Pasadena, were awarded contract by the Bureau of Yards & Docks, Navy Department, for construction of Marine Corps Training Station at Santa Margarita, Calif., at a cost of $13,460,000.

CONCRETE WALL—**Griffith Co.,** 1060 So. Broadway, Los Angeles, will construct a concrete wall at an aircraft manufacturing plant in San Diego County, Southern California. The Los Angeles U. S. District Engineer Office awarded the contract in an amount of less than $100,000.

RADIO STATION—**Barrett & Hilp,** 918 Harrison St., San Francisco, will construct additional facilities at naval air depot hospital and a master radio station at Mare Island, Calif. Bureau of Yards and Docks, Navy Department, awarded the $3,385,563 contract.

NEW SHIPYARD—**The California Steel Products,** Richmond, Calif., have selected a site at the foot of Sixteenth Avenue in Oakland for the construction of a shipyard. The company holds a $500,000 minimum contract with the Navy Department for the building of barges.

WOODEN CULVERTS—**M. J. McGuire and M. Hester,** 796 66th Ave., Oakland, will install wooden box culverts at a holding yard in the San Francisco Bay area. The contract was awarded by the U. S. Engineer Office in San Francisco.

## COLORADO

CANTONMENTS—**Harry G. Worsham & Associates,** 319 Lafayette St., Denver, Colo., will build approximately 11 cantonment buildings in the vicinity of Pando, Colo., at a cost of less than $500,000. U. S. District Engineer Office, Denver, awarded the contract.

PLUMBING AND HEATING SYSTEM—**Douglas Jardine,** Pando, Colo., has been awarded a contract in an amount less than $100,000 for plumbing and heating systems at an army camp in Eagle County, Colo. Work is under supervision of the Denver U. S. District Engineer Office.

HOUSING UNITS—**Federal Housing Authority** has recommended immediate construction of 200 housing units at La Junta, Colo., at an estimated cost of $400,000.

PLANNING CANTONMENT—**The U. S. District Engineer Office,** Railway Exchange Bldg., Denver, Colorado, is preparing plans for 375 miscellaneous cantonment buildings to be erected near Colorado Springs.

## IDAHO

FRAME BUILDINGS—**H. J. McNeel,** Caldwell, Idaho, has been awarded a contract by the U. S. Army Engineers, Portland, for the construction of temporary frame buildings in Ada County, Utah, to cost less than $500,000.

WATER SYSTEMS—**Intermountain Plumbing & Heating Co.,** Boise, Idaho, was awarded a contract by the U. S. Engineer Office, Portland, Ore., for construction of a sewer and water system in Ada County, Idaho, to cost less than $50,000.

NAVAL TRAINING STATION—**The Bureau of Yards and Docks** of the navy department in Washington, D.C., has announced that the total estimated cost for the construction of Farragut naval training station in Idaho is $37,600,000.

## NEVADA

CINNABAR PROPERTY—**Big Canyon Dredge Co.** has leased a cinnabar property in the Dry Gulch district of Pershing County near Lovelock, Nev. A new road has been built to the property and heavy equipment installed.

BOMBING AND GUNNERY RANGE — **C. J. Paradis,** 2320 Idell St., Los Angeles, has been awarded a contract by the U. S. Engineer, Los Angeles, for additional construction and repairs at a bombing and gunnery range in Nye County, Nev., to cost less than $50,000.

## NEW MEXICO

MORE BUILDINGS—**L. H. Hansen & Sons,** Fresno, Calif., has been awarded a contract by the U. S. District Engineer Office, Albuquerque, New Mexico, in an amount less than $700,000 for construction of additional buildings at an air base in Otero County, New Mexico.


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## THE WEST ON ITS WAY

DEPOT BUILDINGS—**Gunnison Pecos Valley Co.,** Roswell, New Mexico, will construct buildings at a depot in Coconino County, Arizona. The $50,000 contract was awarded by the U. S. Engineer Office, Albuquerque, New Mexico.

AIRFIELD MARKINGS — **William H. Wood,** Austin, Texas, is to construct markings at an airfield in Bernalillo County, New Mexico. The $200,000 contract was awarded by the U. S. District Engineer Office, Albuquerque, New Mexico.

### OREGON

SHIPYARD BUILDINGS—**Kaiser Co., Inc.,** have awarded contracts to three Portland firms for additional construction work at Kaiser's three shipyards in the Portland-Vancouver, Wash., area. Wegman & Son are to build an addition to the "deck erection" at the Vancouver yard; Ralph & Horwitz are to cover the steel frame of the assembly building at the new Swan Island yard; and Reimers & Jolivette are to move and remodel the old office building at the Oregon Shipbuilding Corp. yard.

CHROMITE BEACH SANDS—**The Grande Ronde Pine Co.,** a lumber concern of eastern Oregon, has entered the mining business and is interested in chromite beach sands. Tests in a pilot plant are being conducted at Bandon, Ore., and the company has leased property on the Seven Devils road north of Bandon.

GASOLINE STORAGE—**DeLucca & Son,** 1745 Filbert St., San Francisco, will built an air corps gasoline storage and fueling system in Benton County, Oregon. The contract for $62,000 was awarded by the Portland office of the U. S. Engineers.

ELECTRICAL DISTRIBUTION—**Blue Bird Electric Co.,** Corvallis, Ore., has been awarded a contract by the U. S. Engineer Office, Portland, for construction of electrical distribution system in Marion County to cost less than $50,000.

HOUSING UNITS—**Wegman & Son,** Portland, Ore., have been awarded a contract for construction of 3,000 housing units and a school and recreation building in Portland by the U. S. Maritime Commission.

FLIGHT STRIPS—**C. A. Dunn** has been awarded a $406,000 contract for the construction of two airplane landing fields in eastern Oregon, by the State Highway Department.

FRAME BUILDINGS—**Stevens & Koon,** Portland, Ore., was awarded a contract for architectural-engineering services on temporary frame buildings in Umatilla County by the U. S. Army Engineers, Portland.

LIGHTING SYSTEM—**Tice Electric Co.,** Portland, Ore., will build a lighting system in Multnomah County, Ore. Contract for less than $50,000 was awarded from the U. S. Engineers Office in Washington, D.C.

HOUSING—**Victory Homes, Inc.,** is clearing a site at Troutdale, Ore., on which they plan to build 182 multiple-unit houses at an estimated total cost of $1,500,000. The project includes the construction of water system and sewerage disposal plants, streets and sidewalks.

### UTAH

CARNALLITE DEPOSIT—**The Utah Magnesium Corporation's** property near Thompson, Utah, has a total of 75 feet of which approximately 45 per cent is carnallite. Carnallite is a salt consisting of magnesium and potassium chlorides in combination with water, and this deposit is considered one of the richest discovered so far in the United States.

REFINING PLANT — **Utah Magnesium Corporation** has purchased land in Greenriver, Utah, for erection of a plant to refine the magnesium chloride and potash deposits at Thompson, Utah.

WAREHOUSE AND MAINTENANCE BUILDINGS—**Wade Bros.,** 457 Fifteenth St., Ogden, Utah, have been awarded a $100,000 contract for construction of a quartermaster warehouse and maintenance buildings at an air depot in Utah, by U. S. District Engineer Office, Salt Lake City.

AIR BASE HANGARS—**Harrison and Dorman,** 13 South and 4 West, Salt Lake City, Utah, have been awarded a contract for the construction of three AC hangars at an air base in Tooele County, by the Salt Lake City U. S. Engineer Office.

ERECT HOMES—**W. E. Ryberg,** Interurban Depot Bldg., Salt Lake City, and **Strong & Grant,** Springville, Utah, have been awarded a contract to erect 450 homes at Columbia, Utah, for the Defense Plant Corp.


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## THE WEST ON ITS WAY

OIL SYSTEM—**Whitmeyer, Bowers, Jacobson & Olson,** Hill Field, Utah, will construct a lubricating oil system at an air depot in Weber County, Utah. U. S. District Engineer Office, Salt Lake City, awarded the contract.

AIR CONDITIONING SYSTEM — **Fox & Co.,** Ogden, Utah, have been awarded a contract by the Salt Lake City U. S. District Engineer Office for furnishing and installing air conditioning system in control tower at an air depot in Weber County, Utah.

STORAGE EQUIPMENT BUILDINGS — **Intermountain Construction Co.,** 325 Atlas Bldg., Salt Lake City, Utah, was awarded a contract by the U. S. District Engineer Office, Salt Lake City, for the construction of combat storage euipment buildings at an ordnance depot in Tooele County, Utah.

FIRE ALARM SYSTEM—**American District Telegraph Co.,** Salt Lake City, Utah, was awarded a contract by the Salt Lake City U. S. District Engineer Office for the construction of an automatic fire alarm system for hospital expansion at a fort in Utah.

### WASHINGTON

ARMY SUPPLY BUILDINGS—**Sound Construction & Engineering Co.,** Seattle, Wash., has been awarded a $1,000,000 contract by the U. S. District Engineer Office, Seattle, for the construction of army supply buildings in Eastern Washington.

SEA-GOING TUGS—**Grays Harbor Shipbuilding Co.,** Aberdeen, Wash., has been awarded a contract for construction of five sea-going tugs at a cost of $2,400,000.

MILK CONDENSING PLANT—**The Kings County Creamery Association (Wash.)** has announced the construction of a new milk condensing plant at an approximate costs of $20,000. Machinery will be installed at an estimated cost of $85,000.

SHELTERS AND FACILITIES—**Clarence A. Gilmer,** Spalding Bldg., Portland, Ore., has been awarded a contract of between $50,000 to $100,000 by the U. S. Army Engineers for the construction of temporary buildings in Clark County, Wash.

MEDICAL SUPPLY BUILDING — **Hazen & Clark,** 417 Welch Bldg., Spokane, Wash., will construct a $500,000 medical supply building in Spokane County, Wash. The Seattle U. S. District Engineer Office awarded the contract.

RAILWAY TRACKS — **Strong & McDonald,** Tacoma, Wash., have been awarded a $348,903 contract for clearing, grading and building a new location for the Tacoma Eastern Railway tracks on the site of the Nisqually power project No. 2.

SPRINKLER SYSTEM—**Viking Automatic Sprinkler Co.,** 1120 Eighth Ave., So., Seattle, Wash., has been awarded a contract of less than $50,000 by the U. S. Engineer Office for the installation of an automatic sprinkler system and valve house in Spokane County.

BUILDING—**Norge Construction Co., Inc.,** and **A. J. Goering Construction Co.,** 305 Lloyd Building, Seattle, Wash., were awarded a contract of between $100,000 and $500,000 by the U. S. Army Engineers, Seattle, for the construction of a building.

BRIDGE—**Goetz & Brennan, Seattle,** will construct a bridge over Deschutes river, one over tracks of Weyerhaeuser Timber Co. and Chehalis Western Railroad on the secondary road, Tenino to Rainier in Thurston County. The $87,590 contract was awarded by the State Highway Director.

TEMPORARY HOUSING — **Gaasland Construction Co.,** Bellingham, Wash., has been awarded a contract of between $100,000 and $500,000 for temporary housing in Snohomish County. The Seattle district office of U. S. Engineers made the award.

GLUCOSE MANUFACTURE—A new **Pacific Northwest industry** may develop tharough the manufacture of glucose to be made from cull fruits, low-grade wheat and potatoes. The process is being studied as a war substitute for sugar. A glucose plant now is under construction at Lynden, Wash.

OFFICE BUILDINGS—**Prefabricated Ships, Inc.,** Olympia, Wash., are having new office buildings and auxiliary shops built on their 40-acre site at the north end of the Port of Olympia fill. The company holds a $67,000 contract for three covered barges for the army transport service.

ARMY INSTALLATION—**Woodworth Co., Inc.,** and **McDonald Building Co.,** Tacoma, Wash., will construct an army installation in Grant County. The contract for between $1,000,000 and $5,000,000 was awarded by the Seattle District Office, U. S. Army Engineers.

APARTMENT UNITS—**S. H. Erickson,** Seattle, Wash., will build ten structures at a cost of $10,000 each on property between Second and Third avenues West at Roy Street. They all have been financed under FHA.

SANITATION—**Nelse Mortensen & Co.,** 1021 Westlake Ave., No., Seattle, Wash., will build sanitary facilities in King County for less than $50,000. Contract awarded by the Seattle district office of the U. S. Engineer.

MACHINE SHOP ADDITION—**Stetson-Ross Machine Co.,** 3204 First Ave., So., Seattle, Wash., will have a $25,000 addition built on their machine shop by Olav Boen, 2280 Ninth Avenue, No.

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## THE WEST ON ITS WAY

RECREATION BUILDING—**Edward Bremer,** Bremerton, Wash., will construct a $100,000 recreation building at Pacific Avenue and Front Street for the use of Puget Sound navy yard employees.

REVIEW PLANS—**George M. Rasque,** architect for the proposed $200,000 hangar and school to be built at Felts Field, Spokane, Wash., has been called to Washington, D.C., for a review of his plans by the public buildings administration.

RE-ARMING BASE — **Austin Co.** received an additional $10,000,000 contract from the navy department for more facilities at the re-arming base on Whidby Island and a naval air station in the Neah bay section, in Washington.

FRAME BUILDINGS—**L. C. Havstad,** Pasco, Wash., will construct temporary frame buildings in Franklin County. The $50,000 to $100,000 contract was awarded by the war department.

SUB-STATION—An appropriation of $63,000 to construct a substation near Renton, Wash., has been recommended by the Seattle city council's public utilities committee. This will permit a tie-in of an idle 220,000-volt line from the Skagit power project and boost the city's electric power by more than one-third.

NAVAL SUPPLY DEPOT—**Clifton & Applegate,** Spokane, have been awarded an $8,655,000 contract by the navy department for a supply depot near Spokane, Wash.

CRANEWAY—**The Northwest Steel Rolling Mills,** 4315 Ninth Ave., N.W., Seattle, Wash., will erect a craneway at its plant.

LUMBER MILL—**Brooks Lumber Co.,** Bellingham, Wash., which had been destroyed by a fire, will be rebuilt. The plant had been operating 100 per cent on defense orders and had a backlog of government orders of more than $250,000. They manufacture wood stave pipe, cross-arms and tanks.

ARMY BUILDING—**Norge Construction Co., Inc.,** and **A. J. Goering Construction Co.,** Seattle, Wash., were awarded a $100,000 to $500,000 contract by the U. S. Engineer, Seattle, for construction of an army building in Washington.

## OPPORTUNITY SECTION . . .

Priorities regulations have made it practically impossible to secure new machinery for industrial operations unless a plant is doing 100 per cent work on war projects. Even then, long delays are in prospect. The government is urging full use of existing machinery. Listed here are "machinery opportunities" immediately available here on the Pacific Coast. Recently, used machine tools were made subject to priorities, but this does not apply to other classifications of machinery.


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Cutler Hammer Reversing 4 speed pole changer

1—Set Conduit and wire connecting motor and pole changer

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2—250 H.P. Westinghouse, Type CS, 290 RPM, 2200 volts.
1—200 H.P. G.E. Type I, 600 RPM, 440 volts.
1—200 H.P., G.E. 1800 RPM, 440 volt motor.
1—150 H.P. Westinghouse, Type CS, 1800 RPM, 440 volts.
1—150 H.P. Westinghouse, Type CS, 900 RPM, 2200 volts.
1—150 H.P. G.E. Type I, 720 RPM, 440 volts.
1—100 H.P., Slip Ring, G.E., 720 RPM, 440 volts.
1—75 H.P. G.E. Type KT, 1800 RPM, 440 volts.
1—62½-Ft. 25½-inch Double Leather Belt.
1—60 H.P. G.E. Type I, 1800 RPM, 440 volts.
1— 50 H.P. Vertical Fairbanks Morse, 1200 RPM, 220 volts, solid shaft.
1—35 H.P. Crocker Wheeler, 1200 RPM, 220 volts.
1—10 to 30 H.P. Slip Ring, Westinghouse, Type MW, 860 RPM, 440 volts.

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1—1500 Watt, Direct Current, 110 volt, Kohler automatic light plant.
1—600 Amp, 7500 volt, Westinghouse Type F3 oil circuit breaker.
1—300 H.P. Triumph Water Wheel with governor, 50 ft. head.
1—No. 70 ILG Blower, 17,430 CFM, direct to 6 H.P. 340 RPM, 3 phase motor.
2— 75 KVA Transformers, G.E. Type H, 6600 to 120/240/480 volts, 60 cycle.
1—60 H.P. Byron Jackson Turbine pump, 1200 GPM at 140 ft. head.
1— 50 H.P. Single Drum Mine Hoist.
1—37½ KW. Westinghouse DC Generator, 550 volts, 900 RPM.
1— 20-inch Krogh Split Case Pump, 11,000 GPM at 26-ft. head.
1—10 K.W. Direct Current, 110 volt Kohler automatic light plant.

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1118

• STEEL—"Steel Handbook No. 42 for Machine Tool Users" contains the combined standard steel lists of the American Iron and Steel Institute and the Society of Automotive Engineers, Inc., for carbon and alloy steel bars with suggested speeds and feeds for machining many of these grades with standard tools on automatic screw machines. Another interesting feature is the 15-page section describing and illustrating the various cold finishing processes and giving tolerances, size ranges, standard lengths and other information on the various types of cold finished steel. In addition, the book contains tables giving revolutions per minute of spindles at given surface speeds for work of various diameters, drill sizes and lengths of points, allowances and tolerances for screws and nuts, thread elements and tap drill sizes. Thumb-indexed and mechanically bound for easy reference. Republic Steel Corp., Republic Building, Cleveland, Ohio.

1119

• AIR FILTERS—A descriptive folder, "Dirt, Drip, Scale are Axis Agents, Too," shows how dirt, moisture and rust scale kept out of compressed air lines saves pneumatic tools and production-rejects. It suggests uses of air filters in aircraft, foundry, shipbuilding, machine shop and spray painting, and includes a diagram of a typical aircraft assembly installation. Included is a specification sheet which carries a pipe-capacity table. Filters, Inc., 1515 Gardena Ave., Glendale, Calif.

1120

• SPRAY NOZZLE—A non-clogging device which throws a flat, fan-like, hard-hitting spray with such force that it removes dirt and grit from the most irregular surfaces. The high velocity spray is so concentrated that it produces an extremely thin line of impact which amounts to a sharp cutting action. Bulletin No. 409 contains illustrations showing various uses of the spray ranging from cooling fruit to cleaning trolley busses. Chain Belt Co., 1600 West Bruce St., Milwaukee, Wisconsin.

1121

• TURRET MILLS—Bulletin 103 gives the complete story of these vertical turret mills, their design, and application features. An operation chart is included. Rogers Machine Works, Inc., 125 Arthur St., Buffalo, N.Y.

1122

• ELECTRODE CONSERVATION — Booklet consists of a series of shop posters designed to help arc welding operators do more useful work with every electrode. Each poster illustrates a common wasteful practice, then shows the corresponding good practice and points out the ease and simplicity of doing the job the right way. Posters are bound securely into booklet, yet are perforated for simple detachment to be tacked on bulletin boards. Air Reduction Sales Co., 60 East 42nd St., New York, N.Y.

1123

• WIRING SYSTEMS—Complete installation data on porcelain protected knob and tube wiring is contained in a four by six, 32-page booklet. This type of wiring is specified by the latest List of Prohibited Items for Construction Works, and this list is applicable to all government projects. Porcelain Products, Inc., Findlay, Ohio.

1124

• GLUE—A four-page broadside, "Laucks Glues for War," gives details about how wood and glue are alternating for steel in the production of vital war materials. Wood and glue's part in the present conflict is not confined only to the prefabricated housing field, but is out in the line of fire in wood-and-glue airplanes and ships. The folder also contains simplified methods of glue mixing and application. I. F. Laucks, Inc., Maritime Bldg., Seattle, Wash.

1125

• STAYBELITE RESIN — A hydrogenated rosin produced from southern pine is discussed in an eight-page booklet. Physical and chemical properties of Staybelite are set forth in the analysis of a typical sample, and major properties also are discussed generally. Graphs indicating the rate of oxygen absorption of Staybelite as compared with the rate for WW gum rosin and N wood rosin, and indicating the oxygen demand of regular rosin size versus Staybelite size are presented. Hercules Powder Co., Inc., Wilmington, Delaware.

1126

• MACHINING ALUMINUM—Booklet sets forth the general principles of machining aluminum and its alloys; suggests speeds, feeds and depths of cut which will produce satisfactory results; points out where practices and tools common to other metals may be used; and indicates where special practices or tools are desirable. Part one deals with general machine shop practice. Part two describes the practices employed in automatic screw machine operations. Aluminum Company of America, Gulf Building, Pittsburgh, Penn.

1127

• UNIT HEATERS—Bulletins 142 and 142-B describe the horizontal and vertical delivery heaters. Well illustrated, these bulletins also contain specification tables. Modine Manufacturing Co., Racine, Wisconsin.

1128

• TAP RECONDITIONER — A handy wall chart which gives instructional details as to recommended methods of sharpening various types of taps including taper, plug, bottoming and spiral pointed types. Instructions show the correct number of threads to be ground for chamfering each tap type as well as the angle to which the various tap chamfers should be ground. Detroit Tap and Tool Co., 8432 Butler St., Detroit, Mich.

1129

• FUSE CLIPS—Made from a new alloy of beryllium and copper, this metal possesses physical properties which make it more useful than any other base alloy, according to the manufacturer. Folder 10M is a compendium for technical as well as general information, and explains the design and construction of these clips. Littlefuse, Inc., 4757 Ravenswood Ave., Chicago, Ill.

1130

• MACHINE TOOLS—Eight-page leaflet illustrates and describes milling machines and punch presses, listing specifications. It is pointed out that this machinery is built to speed war production. Duro Manufacturing Co., 800 East Sixty-first St., Los Angeles, Calif.

1131

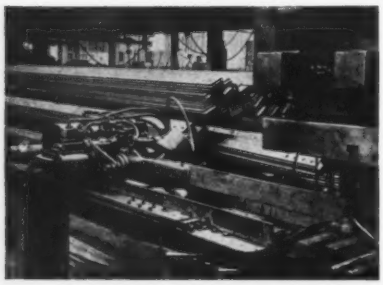
• HEAT TREATMENT—Catalog 107A shows modern installations of the immersed electrode salt bath furnace with the self-circulating, self-heating feature for all the key heat treating processes, including hardening high speed steel tools, carburizing, neutral hardening, heat treating aluminum alloys, selective heating, annealing, brazing and armament applications. Operating principles are discussed, standard sizes shown, together with a variety of covers, pots, fume chimneys as well as mechanized and manual types in general use. Ajax Electric Co., Inc., Frankford Ave. at Delaware, Philadelphia, Penn.

1132

• WELDING POSITIONERS—Well illustrated, Bulletin WP22 describes the new practice of welding on positioners. Included are typical welding jobs with descriptions of position welding methods. Cullen-Friestedt Co., 1300 South Kilborn, Chicago, Ill.

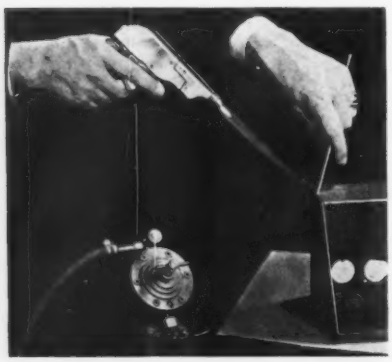
# THE SHOWCASE

• AUTOMATIC SPACER—Consists of a carriage which grips the iron about to be punched and which travels both forward and reverse over a template table on which punch settings are predetermined by means of setting template pins into fixed pin-locating holes covering the template table at 1/16 inch spacings. Compressed air is the motive power. The operator throws the



lever, and the pneumatic jaw moves into position to grip the iron. Another lever moves the carriage and iron forward until the carriage contacts the first template pin. At that point, the press punches the hole, releasing the carriage so that it travels forward to the next pin. Pollasky Engineering Co., 828 North Broadway, Milwaukee, Wisconsin.

• GAS GUN — An automatic acetylene torch which looks like a pistol. Used for soldering, silver soldering, light brazing and lead burning. Weighs 20 ounces, 6½ inches long and 5½ inches high. The gas hose from the acetylene tank connects to the gas gun at the bottom of the pistol grip handle. Ignition is made by pulling the



trigger which strikes a spark from a flint similar to those used in cigarette lighters. Each flint is good for more than 500 ignitions and an extra supply is carried in a special compartment in the breech of the gun. Gas Gun Company, Inc., Salem, Ore.

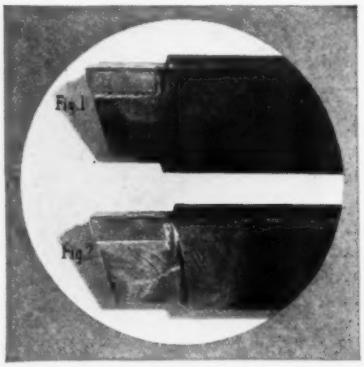
• AIR HOIST—Facilitates simple lifting and lowering operations, speeding up material handling, eliminating physical strain on workers, releasing valuable man-power for more productive labor. Hoist consists of a standard four-way air control valve, mounted on an air cylinder of proper size and capacity. The valve has a control lever designed especially for this purpose and is equipped with convenient pull chains. Galland-Henning Mfg. Co., 2764 So. 31st Street, Milwaukee, Wisconsin.

• PHOTOGRAPHIC IDENTIFICATION — A compact photo-taking unit, mechanically correct and simple in design so employees can be photographed in the plant by a member of the organization. Equipment includes: 36-inch background screen on spring roller; six-foot collapsible background frame with folding tripod;

legend board for necessary identification data; adjustable floodlights, focusing device and instructions. Prentice Products Co., Paramount Building, Fort Wayne, Indiana.

• ANTI - FREEZE — Protection against freezing down to 35 degrees below zero; prevents rust of any part of the cooling system; is harmless to engine, car finish or person; does not boil off or evaporate. Contains no acid, calcium chloride, sodium chloride or other inorganic salts, and according to the manufacturer contains no critical materials and is therefore available in unlimited quantity. Great Northern Chemical Co., Inc., Oak Park, Illinois.

• JOINING TIPS—An improved method of joining carbide and all other types of cutting tips and cutting blades to tool shanks. The process comprises a specially developed "Fluxined-Spelter" which is used to brush onto the contacting surfaces of both the cutting tip and the tool shank. The work is then assembled to form a tight fit and brazed. When completed, the finished braze looks like a gold-plated joint with absolutely no waste of joining mate-




rial. Figure 1 shows assembly just as it comes out of the brazing oven and indicates the small amount of flux scale left on the work. Figure 2 indicates the same piece after the flux scale has been removed. Krembs and Company, 669 West Ohio St., Chicago, Illinois.

• WOOD LOCKERS — Wardrobe racks come single (wall type) or double (back to back) in standard units or any length by the foot. Accommodate three or six persons per running foot and provide for hats, coats, umbrellas and overshoes. All cloth-

ing is kept open to light and air. These new wood lockers are almost identical in design and finish to the Peterson steel racks. Vogel-Peterson Co., Chicago, Illinois.

•RUBBER PRESERVATION — A new and revolutionary tank-dip process of preserving rubber, consisting of a vegetable base, has been announced. The Prolatex System is claimed to preserve the elasticity and resilience of rubber; to fill the pores, cracks, minor cuts and abrasions; to seal

the entire outside surface of the rubber against oil, grease, gas and air as well as rubber-destroying rays of the sun; and to restore "new-rubber" appearance. Transmotive Laboratories, Chicago, Illinois.

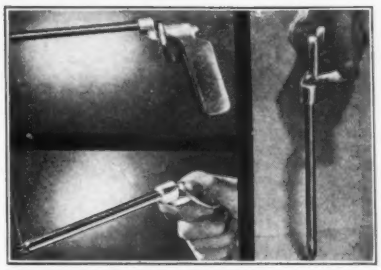
• ARC WELDER — Contains a built-in cooling system. Capable of handling an electrode from 1/16 to 3/16 inch, the new model 250F has 24 heat steps, an input voltage of 230 volts and a current range from 15 to 250 amperes. The 250F has a

60-cycle frequency, and operates on a single phase or one phase of a two or three phase current. Special frequencies may be built to order. Ergolyte Mfg. Co., Lawrence at Erie Avenue, Philadelphia, Pennsylvania.

• LOK-ON NUT—A lock that has no key, no tumbler, no pins and no fragile

parts. It is a tough, hardened steel, and of a shape that will not permit any known tool to get a grip on the Lok-On. It is installed by replacing one lug nut or bolt with it. Only the man with the "cap" part of the lock can take it off. Streeter-Amet Company, 4103 Ravenswood Dr., Chicago, Illinois.

• CUTTER-RETRIEVER—Light weight, flat, and easy to slip into a belt or holster. Designed to cut wire with one-handed, one-fingered trigger operation and to retrieve



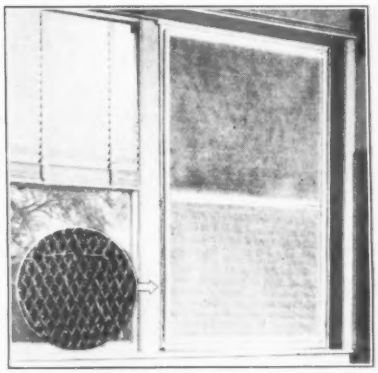
or to hold in a powerful grip, nuts, bolts, washers and cotter pins at inaccessible points. Cutting edges are located at the end of the long slim barrel, and to cut wire, the operator merely places the wire between the cutting edges and snips off the wire by bringing down the trigger. Techtmann Industries, Inc., 828 North Broadway, Milwaukee, Wisconsin.

• FURNACE DOOR — A new type of furnace access, inspection and clean-out door for boilers, incinerators. Door is lined with Plicast L-W-I light weight insulating refractory material which reduces the weight of the door, protects the metal from the heat and decreases the radiation of heat into the boiler room. A feature is the Lock-Tite handle which locks the door so tightly that all infiltration of excess air around the door is eliminated. The handle operates on a cam and lever principle, so the further the handle is depressed, the tighter the door is forced against the frame. Literature available. Plibrico Jointless Firebrick Co., 1800 Kingsbury St., Chicago, Ill.

• HYDRAULIC DRILVISE — Designed for holding work on the table of all types of drill presses, planers, milling machines, lathes and other machines. Entirely foot controlled and hydraulically operated, this new tool permits the use of both hands in the operation, set-up and removal of work

from the machine on which it is mounted. The unit consists of a conventionally shaped drill press vise, and a hydraulic foot control base is connected to it by a six-foot length of flexible rubber tubing. Studebaker Machine Co., 9 So. Clinton St., Chicago, Illinois.

• BLACKOUT SHATTER SCREEN—A porous blanket made up of 16 layers of black flameproof expanded fiber and four layers of light colored flameproof expanded fiber, mounted in a light wooden frame and attached inside of windows, skylights and door glass. According to the manufacturer,



after fifteen tests, this screen has proved most effective in stopping flying glass and does not permit any light to show. Research Products Corp., Madison, Wisconsin.

• SUPER SIGHT—Provides magnifying lens and light in one unit which can be moved about with finger-tip control, remaining in whatever position you place it.

Extensively used for close inspection, fine assembly and precision work. Fitted with mounting brackets for use on bench or machine. The Boyer-Campbell Co., 6540 Antoine St., Detroit, Michigan.

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# CONVENTION CALENDAR

Oct. 8-10 — **Porcelain Enamel Institute, Inc.,** Ohio State University, Columbus, Ohio.

Oct. 10-17 — **National Dairy Assn.,** Memphis, Tenn.

Oct. 11-14 — **Society of American Foresters,** Hotel Utah, Salt Lake City, Utah.

Oct. 12—**American Welding Society,** Book-Cadillac Hotel, Detroit, Mich.

Oct. 12-16 — **24th National Metal Congress and Exposition,** Cleveland, Ohio.

Oct. 12-16 — **American Society for Metals,** Statler Hotel, Detroit, Mich.

Oct. 14-17 — **Pacific Logging Congress,** Multnomah Hotel, Portland, Oregon.

Oct. 14-17 — **American Institute of Steel Construction, Inc.,** White Sulphur Springs, West Virginia.

Oct. 15-16 — **American Management Association,** Drake Hotel, Chicago, Illinois.

Oct. 19-22 — **American Hardware Mfrs. Assn.,** Palmer House, Chicago, Ill.

Oct. 19-23—**The Wire Association,** Detroit - Leland Hotel, Detroit, Mich.

Oct. 19 - 24 — **American Welding Society,** Bellevue-Stratford Hotel, Philadelphia, Penn.

Oct. 20-22—**American Railway Bridge and Building Assn.,** Hotel Sherman, Chicago, Ill.

Oct. 25-29 — **National Lubricating Grease Institute,** Roosevelt Hotel, New Orleans, La.

Oct. 26-30—**National Electrical Mfrs. Assn.,** Waldorf-Astoria Hotel, New York, N.Y.

Oct. 27-29 — **31st National Safety Congress & Exposition,** Sherman Hotel, Chicago, Ill.

November — **Western Growers Protective Assn.,** Biltmore Hotel, Los Angeles, Calif.

Nov. 9-13—**American Petroleum Institute,** Stevens Hotel, Chicago, Ill.

Nov. 10-13—**National Association of Ice Industries,** Sherman Hotel, Chicago, Ill.

Nov. 17-22—**National Chemical Exposition,** Chicago, Ill.

Nov. 24-29—**National Chemical Exposition,** Hotel Sherman, Chicago, Illinois.

Nov. 30 - Dec. 3 — **American Society of Mechanical Engineers,** annual meeting, Hotel Astor, New York City.

Dec. 2-4 — **Highway Research Board,** Hotel Statler, St. Louis, Mo.

Dec. 2-4 — **National Association of Manufacturers,** Waldorf Astoria Hotel, New York City.

Dec. 3-4 — **American Stock Yards Assn.,** Congress Hotel, Chicago, Ill.

Dec. 4-5 — **Associated General Contractors of America,** Northern California Chapter, Palace Hotel, San Francisco, Calif.

Dec. 9-11 — **Mid-West Implement Dealers Assn.,** Rome Hotel, Omaha, Nebraska.

Dec. 12—**National Association of Uniform Manufacturers,** New York City.

Dec. 28-30 — **American Marketing Assn.,** Cleveland, Ohio.

Dec.—**Northwest Mining Assn.,** Davenport Hotel, Spokane, Wash.


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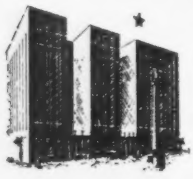

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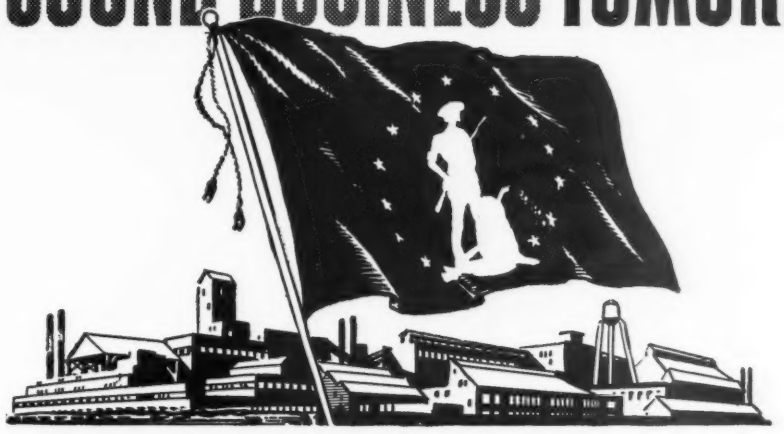
## INDEX TO ADVERTISERS IN THIS ISSUE


Albina Engine & Machine Works.... 28
Alvo Nut & Bolt Company..... 34
California Barrel Company..... 4
Crocker First National Bank..... 25
Elwell-Parker Company..... 6
Fishstrom Staple Company..... 27
Hotel St. Francis..... 34
Jeffries Transformer Company..... 30
Johnson Gear & Mfg. Company.... 29
Johnston, A. P., Company..... 28
Larkin-Powell Company ..... 34
Littlejohn-Reuland Co..... 30
Pacific Paint & Varnish Co..... 26
Paraffine Companies, Inc..... 19
Reliable Electric Works..... 30
Security First National Bank..... 23
Stauffer Chemical Company..... 21
Stephens Adamson Mfg. Co. *Back Cover*
Victor Equipment Co.....*Second Cover*

# FOR VICTORY TODAY AND SOUND BUSINESS TOMORROW



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